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MASSACHUSETTS CONTINGENCY PLAN

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Discussion Papers

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MASSACHUSETTS CONTINGENCY PLAN

Discussion Papers

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OPTIONS FOR EVALUATING RISK OF HARM TO HEALTH IN THE 21E PROCESS

I. INTRODUCTION

This discussion paper addresses the health component of two major questions that are critical to the Chapter 21E process. Those two questions are:

1. How will DEQE determine *if* a particular Ch. 21E site requires remediation?
2. How will DEQE determine *the extent* to which a particular site must be remediated in order to achieve a "permanent solution" or a "temporary solution"?

In general terms, remediation is required if an "imminent hazard", or a "substantial hazard" exists, or if "significant risk" would be posed in the foreseeable future. This paper presents options for technically defining "significant risk" of harm to health in the Chapter 21E context. "Significant risk" is a component of both an "imminent hazard" and a "substantial hazard".

Also in general terms, a "permanent solution" is achieved when "significant risk" will not be posed by the site in the foreseeable future. A "temporary solution" is achieved when a "substantial hazard" has been eliminated ("significant risk" will not be posed by the site for several years). This discussion paper is focused on methods of assessing the significance of risk to human health and not public welfare, safety or the environment. Risk to the environment is the subject of another discussion paper, and the Department is in the preliminary stages of considering methods for evaluating public welfare and safety. Perhaps the best introduction to this discussion is a definition of terms.

A. WHAT IS REQUIRED FOR A "PERMANENT SOLUTION"?

The statute states,

> "A permanent solution, at minimum, will ensure attainment of a level of control of each identified substance of concern at a disposal site or in the surrounding environment such that no such substance of concern will present a significant or otherwise unacceptable risk of damage to health, safety, public welfare or the environment during any foreseeable period of time... **AND** where feasible, shall include measures designed to reduce to the extent possible the level of oil or hazardous materials in the

environment to the level that would exist in the absence of the disposal site of concern".

B. WHAT IS REQUIRED FOR A "TEMPORARY SOLUTION"?

A temporary solution "shall eliminate any substantial hazard to health, safety, public welfare, or the environment which is presented by the disposal site or any oil or hazardous materials from the site in the environment". (Emphasis added)

C. WHAT IS A "SUBSTANTIAL HAZARD"?

A "substantial hazard" is a "hazard which would pose a significant or otherwise unacceptable risk of harm to health, safety, public welfare, or the environment if it continued to be present for several years".

D. "SIGNIFICANT RISK"

Both permanent and temporary solutions must achieve the elimination of "significant risk" in these contexts. However, Chapter 21E does not define "significant risk". The statute does, however, provide some guidance concerning interpretation of the term "significant risk".

The statute requires the consideration of existing public health and environmental standards along with other relevant factors in "significant risk" determinations. The statute states:

> "In determining whether the risks remaining following implementation of such solution will be significant, the department shall consider existing public health or environmental standards where applicable or suitably analogous and any current or reasonably foreseeable uses of the disposal site and the surrounding environment that may be affected by the oil or hazardous materials at the site or in the surrounding environment".

Characterizing risks of harm to health is an activity that has occurred for decades and perhaps centuries. We have historically assessed and managed risks without actually calling those activities "risk assessment" and "risk management". For example, "safe" doses of drugs have been determined, organisms in drinking water responsible for infectious diseases have been identified and controlled, and safe drinking water standards have been developed. Each of these activities involved "risk assessment" and "risk management". Only in the last few years has there been a tendency in the published literature and in regulatory activities to use the terms "risk assessment" and "risk management". Risk assessment identifies risks and estimates their magnitude. Risk management determines which risks need to be controlled and how they should be controlled. In other words unacceptable risks are identified and are reduced to acceptable or allowable levels.

The proper management of risk requires a knowledge of the assumptions and uncertainties involved in estimating the nature and magnitude of risks.

Currently "Health risk assessment" is a developing field. In the past, a great deal of risk assessment was done only in response to an observed health problem. For example, if a group of people became ill suddenly, an investigation might identify a drinking water contaminant as a probable cause. The concentration of the drinking water contaminant might be identified, thereby yielding the conclusion that the reported concentration of that contaminant in drinking water is likely to cause illness in the human population. Today, the effects of environmental factors on human health are still being studied by observing patterns of illness in human populations and relating those patterns to the environmental factors. However, that process does not currently provide enough information to make all the necessary decisions in the environmental or occupational regulatory arena. In addition, the approach precludes focus on prevention of human illness which is preferable to merely reacting to observed incidents. Therefore, much of today's health risk assessment work depends on predictive toxicology which in turn depends heavily on the extrapolation of animal toxicity data to humans. Therefore, risk assessment estimates the likelihood of adverse health effects in humans, for the most part based on animal toxicity data. Risk assessment does not necessarily produce black and white characterizations of risk. Risks are characterized in terms of likelihood or probability. Predictive toxicology and quantitative risk assessment are quite often the best tools available for characterizing the health risk from existing or potential exposures to environmental factors.

Because it is still developing and information is incomplete, risk assessment is not an "exact science". Risk estimates are just that --- estimates, rather than absolute predictions. The "state of the art" risk assessment cannot conclude such things as "no one will be harmed", "this situation is absolutely safe", or that "two people will get cancer as a result of this situation". The state of the art risk assessment might conclude that "adverse health effects would not be expected", "the health risks are very low" or that "perhaps as many as two cancer cases might occur, but it is possible that fewer, perhaps none will occur".

There are uncertainties in risk assessment. These uncertainties are due to the relative sensitivities to hazardous materials between animals and humans; the estimation or measurement of human exposures to hazardous materials, and the potential toxic interactions of hazardous materials in the human body. These uncertainties are generally addressed by applying uncertainty factors or making other conservative estimates or assumptions in risk assessments. In the regulatory setting, risk assessments characterize a range of risks. Using very conservative (worst-case) estimates and assumptions, the upper end of the risk range may represent an upper bound of risk i.e., the actual risk is most likely much less than the value at the upper end of the range. Using "most probable" estimates and

assumptions about toxicity and exposures would yield what is sometimes called a most probable risk estimate. And if there is a possibility that toxicity or exposure are less than the "most probable" estimates, then a lower bound of the risk range might be identified.

In making risk management decisions, it is essential that the degree of uncertainty in the risk characterization be considered. It is also important to have standardized risk assessment techniques so that within an agency a set of risk management criteria can be used to control risks in a consistent manner. An estimated cancer risk range of zero to one in one million should mean roughly the same thing in each situation being evaluated.

Although imperfect, risk assessment is still the best available tool despite the uncertainties involved. When its limitations are recognized and considered, quantitative risk assessment is a useful tool for providing input into the risk management process. It is the best tool currently available for characterizing health risks in many situations, and there is not another practical alternative currently available.

When reasonable estimates and assumptions relative to toxicity and exposures are used consistently, risk assessments provide a starting point for risk management.

This paper discusses three basic processes for determining the need for remediation and for developing remediation targets or goals which are consistent with the Chapter 21E language. The three processes are: 1.) Use of existing "standards" as the sole decision criterion; 2.) Use of predetermined clean-up levels or standards and/or total site target risk levels or individual chemical target levels as decision criteria; 3.) Use of site-specific risk assessment/management as the sole decision criterion. In this paper, Option 1 represents the first process listed above, Options 2-5 represent the second process above, and Option 6 represents the third process. Each of the Options will be presented below. The presentation of each option includes a brief introduction, a description of the "mechanics" of the option, and a list of advantages and disadvantages associated with that option. Following presentation of the options is a request for comments which identifies specific issues which are particularly important.

The Department is particularly interested in comments on Option 2 and Option 4 which appear to be most promising at this time. Although both of those options are mechanically similar, they differ in the way significant risk is approached and in the way the impacts of mixtures of hazardous materials are evaluated. Option 2 evaluates risks posed by the site as a whole and Option 4 evaluates risks posed by individual chemicals in individual media. Option 2 utilizes a recently published method for evaluating impacts of chemical mixtures and Option 3 uses an alternative approach.

NOTE: Two additional approaches have been discussed but are not presented here as options. Those two approaches are: 1. Remediate all sites to as close as "background" as is feasible; and 2. Remediate all sites using the best available technology. Neither of these approaches would require health assessment. Therefore, neither of these approaches would demonstrate the elimination of "significant risk", which is the major focus of the statute.

II. Option I

A. INTRODUCTION

The first option might be described as a strictly literal interpretation of the statute. This option reflects the following statute guidance (emphasis added):

> For the purposes of this section, a "permanent solution" shall mean a measure or combination of measures that, at a minimum, will ensure attainment of a level of control of each identified substance of concern at disposal site or in the surrounding environment such that no such substance of concern will present a significant or otherwise unacceptable risk of damage to health, safety, public welfare, or the environment during any foreseeable period of time. In determining whether the risks remaining following implementation of such solution will be significant, the department shall consider existing public health or environmental standards where applicable or suitably analogous, and any current or reasonably foreseeable uses of the disposal site and the surrounding environment that may be affected by the oil or hazardous material at the site or in the surrounding environment.

This option uses "applicable or suitably analogous" standards as the sole criterion for significant risk determinations. Consistent with EPA's Superfund Program, "applicable" standards are those which legally regulate or address conditions (the activities, substances, or circumstances) at the disposal site. "Suitably analogous" standards are those which, although not legally "applicable", were developed to address activities, substances or circumstances similar to those at the disposal site.

Examples of "applicable" standards would be a drinking water MCL for a public drinking water supply or an ambient water quality criterion for a surface water body. An example of "suitably analogous" standards would be a Massachusetts public water system MCL being used for a contaminant in an individual private well.

MECHANICS OF OPTION 1

1. Identify and determine the concentrations, in contaminated media of the oil and hazardous materials (OHM) at the disposal site. (from Phase II work)

2. Identify any existing public health and environmental standards which are applicable or suitably analogous to OHM at the disposal site. Table 1 summarizes the types of chemical-specific standards and guidelines which are available. Table 2 lists commonly identified hazardous materials and indicates the types of standards and guidelines which are available for each of them.

TABLE 1 - SUMMARY OF EXISTING STANDARDS AND GUIDELINES

STANDARDS/GUIDELINES/CRITERIA

FEDERAL

DRINKING WATER MAXIMUM CONTAMINANT LEVELS (MCLs):*

National Interim Primary Drinking Water Regulation. MCLs for 10 inorganic chemicals (8 metals, 2 anions); 6 organic chemicals (all pesticides); total trihalomethanes (4 chemicals); turbidity; and radioactivity. Based on health effects, reflecting technological and economic feasibility of removing the contaminant from the water supply.

DRINKING WATER MAXIMUM CONTAMINANT LEVEL GOALS (MCLGS)*

MCLGs for 8 volatile organic chemicals. Entirely health-based.

DRINKING WATER PROPOSED MAXIMUM CONTAMINANT LEVELS (PMCLs)*

PMLCs for the same 8 VOCs.

DRINKING WATER PROPOSED MAXIMUM CONTAMINANT LEVEL GOALS (PMCLGs)*

PMCLGs for 40 chemicals (comprised of inorganic chemicals, synthetic organic chemicals and microorganisms.)

DRINKING WATER HEALTH ADVISORIES*

54 chemicals or chemical groups. Based on non-carcinogenic endpoints of toxicity.

AMBIENT WATER QUALITY CRITERIA (HUMAN HEALTH EFFECTS)*

Criteria for 79 organic chemicals and pesticides, 14 metals, asbestos, and cyanide. Based on health effects (carcinogenicity, toxicity), and organoleptic.)

AMBIENT WATER QUALITY CRITERIA (AQUATIC LIFE)

Numerical guidance for 46 organic chemicals or classes of chemicals, 13 metals, and cyanide. Intended to protect most, but not necessarily all, species in a balanced, healthy aquatic community.

NATIONAL AMBIENT AIR QUALITY STANDARDS*

Standards for 6 chemicals or chemical groups and for airborne particulates. Health-based.

ACTION LEVELS AND TOLERANCE LIMITS FOR SEAFOOD

Limits for 12 pesticides, mercury, dioxins, and PCBs in seafood for human consumption. Economic and technical considerations are weighed against scientific evidence of public health effects.

STATE (MASSACHUSETTS)

DRINKING WATER REGULATIONS (MCLS)

Based on the National Interim Primary Drinking Water Regulations.

DRINKING WATER GUIDELINES

Guidance for 29 organic chemicals and uranium. Health-based.

AMBIENT AIR QUALITY REGULATIONS

Based on the Primary National Ambient Air Quality Standards.

PROPOSED ALLOWABLE AMBIENT AIR LEVELS (AALs)

108 chemicals or chemical classes (84 organics, 16 inorganic chemical compounds, 7 metals, and asbestos.) Health-based.

*Reference: Superfund Public Health Evaluation Manual EPA 540/1-86/060

TABLE 2 HAZARDOUS MATERIALS MOST COMMONLY FOUND
AT MASSACHUSETTS DISPOSAL SITES
AND CORRESPONDING GUIDANCE

CHEMICAL	D.W. STD.	D.W. GUIDELINE	WQC H.H.	WQC A.L.	AIR STD.	AIR G.L.	SOIL STD.	SEAFOOD STD.
ARSENIC	X		X	X				
BENZENE		X	X			X		
CADMIUM	X		X	X		X		
CARBON TETRACHLORIDE	X	X	X			X		
CHROMIUM VI	X		X	X		X		
COPPER		X	X	X				
CYANIDE		X	X	X				
1,1-DICHLOROETHYLENE	X	X	X					
1,2-DICHLOROETHANE	X	X				X		
P-DICHLOROBENZENE	X	X	X			X		
ETHYL BENZENE		X	X			X		
LEAD	X		X	X	X	X		
MERCURY	X		X	X				X
PAHS			X					
PCBS			X			X		X
TETRACHLOROETHYLENE		X	X			X		
1,1,1-TRICHLORETHANE	X	X				X		
VINYL CHLORIDE	X	X	X			X		
XYLENE		X				X		

X" indicates that there is an existing standard or guideline.

D.W. STD.: Drinking Water Maximum Contaminant Level (MCL)
D.W. Guideline: Drinking Water Guideline or Health Advisory recommended by DEQE
WQC: Water Quality Criteria for Human Health(H.H.) and Aquatic Life (A.L.)
Air Std.: National Ambient Air Quality Standard
Air G.L.: Allowable Ambient Level (AAL) recommended by DEQE
Soil Std.: There are no applicable soil standards.
Seafood Std.: Action Levels and Tolerance Limits for Seafood.

3. Compare site conditions* to applicable or suitably analogous standards.

   - o If site conditions do not meet the requirements of corresponding standards, a "significant risk" exists and Remedial Action Alternatives which meet the requirements of each of the standards must be considered for implementation.

   - o If site conditions at the disposal site meet the requirements of the corresponding standards, no "significant risk" exists and no further action is necessary. The feasibility of achieving a level of OHM that would have existed in the absence of the disposal site represents a topic for further discussion.

NOTE: IN THIS PROCESS, A SITE CONTAMINANT IN A GIVEN MEDIUM IS EVALUATED ONLY IF STANDARDS EXIST FOR THAT SUBSTANCE IN THAT MEDIUM. IF NO STANDARD EXISTS, THAT SUBSTANCE IN THAT MEDIUM IS NOT EVALUATED.

C. ADVANTAGES/DISADVANTAGES OF OPTION 1

Table 3 summarizes the advantages and disadvantages of using Option 1 to implement Chapter 21E.

* "site conditions", throughout this paper, refer to ongoing activities, amounts and location of oil and hazardous materials, and other circumstances related to the site.

Table 3 - Summary of Advantages and Disadvantages of proposed options

Option 1

Advantages	Disadvantages
- Ease of use	- Standards are not available for many OHMs in water and air. There are virtually no standards.
- Minimal resources required to implement	- Cannot currently evaluate health impacts of <u>any</u> OHM in soil and of may OHM in other media.
- Can be applied to every site	- Does not address impacts of multiple contaminant or multi-media exposures.
- Consistent with permitting activities within DEQE	- Does not address contaminants (and corresponding risks) when no standard exists.
	- Generally less conservative than EPA Superfund approach.
	- Does not address unique site exposure conditions and therefore may be more or less conservative than is necessary to eliminate "significant risk".
	- May require costly clean-ups in some instances where there is no exposure.
	- Not all standards are based solely on significant health risk. Some standards are developed by considering technological or economic factors. Therefore they may not be stringent enough.

III. Option 2

A. INTRODUCTION

The second option is a 3-tiered approach which is really an extension of the approach proposed in Option 1. This option was developed in order to: address chemical mixtures and multi-media exposures; make it immediately possible to evaluate the health impacts of a greater number of OHM than is currently possible using standards alone; provide a streamlined process for site assessment and remedial alternatives development. This option uses: 1. predetermined clean-up levels for certain categories of sites; or 2. combinations of standards which adequately account for site conditions (when predetermined clean-up levels are not available); or 3. Total Site Target Risk Levels (when neither predetermined clean-up levels nor an appropriate combination of standards is available) to determine the need for remediation and the extent of remediation which is required.

Predetermined clean-up levels represent: 1) chemical-specific, medium-specific, health-based concentration requirements or, 2) requirements to utilize technology which has been proven to eliminate "significant risk" for a given type of disposal site. A predetermined clean-up Level is developed by DEQE for a category of disposal sites using techniques outlined in Tier III. Table 4 is an example of a hypothetical "package" which would be available for a category of sites. The "package" in Table 4 would be used at any site in the stated category to determine the need for remediation and to identify the required extent of remediation. Although few "packages" of health/risk-based predetermined clean-up levels currently exist, more are presently under development.

TABLE 4 - HYPOTHETICAL PRE-DETERMINED CLEAN-UP LEVEL "PACKAGE"

SITE CATEGORY: A site where a gasoline tank has leaked into soil and groundwater. Groundwater is not and will not be used as drinking water. No other oil or hazardous materials have been released at the site. The site is in a residential area.

PREDETERMINED CLEAN-UP LEVELS: The levels reported below apply only to the sites which fall into the category described above. If any of the levels listed below are or will be exceeded at any exposure point, "significant risk" exists. Remedial activitied must ensure that none of these levels are exceeded at exposure points.

Oil Hazardous Material	Air Conc. (Mg/m^3)	Surface Water Conc. (mg/l)	Groundwater Conc. (mg/l)	Soil Conc. mg/kg
A	3.0	.02	------	40.0
B	14.0	.1	------	210.0
C	11.0	2.2	------	11.0
D	200.0	10.0	------	97.0
E	460.0	19.0	------	2.0

NOTE: These levels apply only at exposure points. If there are not any exposure points, these levels may not apply.

It should be noted that this approach is not limited to evaluation of risks posed by exposure to individual OHM, but focuses on risks posed by simultaneous exposure to all OHM at a disposal site. The following describes the Option 2 process.

B. MECHANICS OF Option 2.

1. Identify and quantify the oil and/or hazardous material at the disposal site and identify other site conditions per Phase II - Full Evaluation (MCP).

2. Determine if Tier I, Tier II, or Tier III applies to the disposal site and implement the requirements of the appropriate Tier as described below:

Tier I

Compare Site Conditions with Predetermined Clean-up Levels

1. Determine if the Disposal Site falls into a category of Disposal Sites for which there are pre-determined clean-up levels. (If it does not proceed to tier II.)

2. Identify predetermined clean-up levels (PCUL) applicable to the Disposal site. A list of categories of sites and corresponding predetermined clean-up levels will be developed, published and updated periodically by DEQE. These levels can be either of two types:

- Numerical predetermined clean-up levels quantify the amount of OHM which may remain at the site without "significant risk" of harm to health. For a given category of sites there is a "package" of predetermined clean-up levels published by DEQE. Once a site is determined to fall into a category, the "package" is pulled "off the shelf" and serves as the focus of remedial alternatives development.

- Technology-based levels require use of a technology that has been proven effective in eliminating significant risk associated with the type of contamination present at the given category of sites. This is also a published "package".

3. Compare site conditions to those conditions represented by predetermined clean-up levels (PCUL).

- If site conditions (or volumes, concentrations) do not meet the requirements of PCULs, a "significant risk" exists and Remedial Action Alternatives which achieve the predetermined clean-up levels must be considered for implementation.

- If site conditions (or volumes, concentrations) meet the requirements of PCULs, a "significant risk" does not exist and further action would not be necessary. (The feasibility of achieving a level of oil and/or hazardous materials that would exist in the

absence of the site represents an area for further discussion).

- o If the site does not fall into a category for which predetermined clean-up levels exist, proceed to Tier II.

Tier II

Compare Disposal Site Conditions with a Combination of Standards/Guidelines

This Tier is considered only if the site does not fall into a category of sites for which predetermined clean-up levels exist. In this context a combination of standards is a group of standards which adequately accounts for exposure conditions at the site.*

1. Determine if a combination of standards exists which adequately accounts for exposure conditions at the site. If no such combination exists, proceed to Tier III.

2. Identify the appropriate combination of standards/guidelines.

3. Compare site conditions to each of the standards/guidelines included in the appropriate combination.

- o If the concentration of any site contaminants <u>at exposure points</u> exceed standards/guidelines, (2. above) "significant risk" exists and Remedial Action Alternatives which achieve each of the standards (2. above) must be considered for implementation.

- o If no site contaminant concentrations <u>at exposure points</u> exceed standards/guidelines (2. above), a "significant risk" does not exist and further action would not be necessary. (The feasibility of achieving a level of oil or hazardous materials that would exist in the absence of the site represents an area for further discussion).

- o If the site does not have an appropriate combination of standards, proceed to Tier III.

* In order to adequately account for exposure conditions at the site, a combination of standards must include a standard for each oil or hazardous material in each exposure medium at each exposure point. In addition, each of the standards must have been developed in such a way that the impacts of multi-media and multiple contaminant exposures are evaluated. A set of criteria will be identified and published by DEQE to assist in making this determination.

Tier III

Compare Total Site Risks to Target Risk Levels

This Tier applies only when the Disposal Site does not fall into a category of Disposal Sites for which there are predetermined clean-up levels and there is no combination of standards/guidelines which adequately accounts for conditions at the Disposal Site. Target Risk Levels represent the maximum total site risks which are not significant. Target Risk Levels, as defined below, apply to all Disposal Sites.

The following are generic target risk levels for human health which are to be used in the implementation of these regulations:

- A Hazard Index of less than or equal to one (1) is the target risk level for "total site threshold risk". A Hazard Index greater that one (1) represents a "significant risk" for the purpose of these regulations.
  (SEE DISCUSSION PAPER FOR DETAILS)

- A total site carcinogenic risk in the range of one in ten-thousand to one in ten million (10^{-4} - 10^{-7}) is the target risk level for "total site carcinogenic risk".

Both of the target risk levels (threshold & carcinogenic) are applied at each site.

Tier III involves the following steps.

1. Identify target risk levels which apply to the site. Target risk levels are the same at all sites. These risk levels are specified by DEQE. (See generic target risk levels which immediately precede this paragraph.

2. Estimate total site risks (both threshold and carcinogenic risks).

   A. From the available Phase II - Full Evaluation information, identify: oil and hazardous materials which are present; locations where humans are or can reasonably be expected to be exposed (exposure points); and concentrations of oil and hazardous materials at the exposure points (exposure point concentrations).

   B. Characterize site risks. Calculate total site risks.

   - Total site cancer risks are calculated by applying published cancer potency values to intakes resulting from exposure point concentrations. Total site cancer risk (TSCR) is the sum of risks associated with all of the oil and hazardous materials at the site.

- o Total site threshold risks are calculated by applying published Reference Dose Values and intakes resulting from exposure point concentrations to a Hazard Index equation. The total site threshold risk (TSTR) is the value generated by the Hazard Index Equation. This approach assumes additivity of effects for simultaneous exposure to mixtures of substances with similar toxic mechanisms.

3. Compare total site risks to target risk levels.

- o If either the estimated TSTR or TSCR exceed the target risk levels a "significant risk" does exist and Remedial Action Alternatives which achieve target risk levels must be considered for implementation.

- o If neither the TSTR nor the TSCR exceeds the target risk levels, "significant risk" does not exist and no further action is required. (The feasibility of achieving a level of oil and/or hazardous materials that would exist in the absence of the site [roughly background] represents an area for further discussion).

Using the Total Site Risks as clean-up requirements allows flexibility in the design of remedial alternatives. The assessment can identify the medium or hazardous material which presents the major portion of risk at the site. Then, the remediation can be focused on that medium or hazardous material. This makes it possible to design alternatives which acheive the greatest risk reduction per unit cost. This type of management by risk could assist the Department in efficiently protecting the public health.

C. ADVANTAGES/DISADVANTAGES OF OPTION 2.

Table 5 Summary of the advantages and disadvantages of using Option 2

ADVANTAGES	DISADVANTAGES
- can be applied to every site.	- This approach is not currently used in activities of other divisions or programs within DEQE.
- Uses resources efficiently. A program progresses, resource needs decrease.	- Requires substantial resources at beginning of implementation.
- Addresses unique site exposure conditions	- Assessment of mixtures relies on currently available data and science policy decisions instead of technical issues.
- Is at least as conservative as EPA approach for Superfund sites.	
- Could serve as a starting point for Department-wide "Management by Risk" policy.	
- Approach is specific to Ch. 21E requirements. It is not limited to approaches used for other mandates.	
- Provides flexibility in design of remedial alternatives. Provides framework for greater risk reduction per unit cost.	
- Makes it less likely that costly remediation yielding little reduction in risk will take place.	
- Utilizes most recent risk assessment techniques.	
- Clearly focuses on "significant risk" as required by the statute.	
- Addresses multiple contaminant and multi-media exposures.	

IV. Option 3

A. INTRODUCTION

The third option is to adopt Option 2 as of March 1, but develop in two years a more refined Departmental approach for assessing mixtures and multi-media impacts.

B. Mechanics of Option 3

The mechanics of Option 3 are the same as the Option 2 three-tiered approach until the Department develops and refines its policy and procedures for assessing the health risks posed by simultaneous exposure to all OHM at a disposal site. Option 3 includes a methodology and policy to assess multi-media and combined contaminant impacts that are based on the U.S. EPA Guidelines for the Health Risk Assessment of Chemical Mixtures (F. R. Vol 51 (185) 1986). These guidelines need to be developed into clear-cut procedures for the Massachusetts Chapter 21E program. As more information is gained about specific chemicals at sites, the procedures can focus on and refine how they are assessed. These will be part of program development activities.

C. Advantages/Disadvantages of Option 3

The advantages and disadvantages of Option 3 are the same as those for Option 2, with the additional advantage that within two years the Department would develop a more refined approach to assessing total site risk (mixtures and multi-media exposures) than is currently available. Data collected from ongoing site assessments could be utilized to address specific issues and conditions at Massachusetts 21E sites.

V. Option 4

A. INTRODUCTION

The fourth option is also a three tiered approach similar to the process outlined in Option 2 and Option 3. This option is to be used on an interim basis for 2 years until a more refined approach to assessment of multi-media and multiple-contaminant exposures is developed. Within two years of implementation of Option 4, the refined approach would be incorporated into the Ch. 21E program.

Option 4 differs from Options 2 and 3 in the following ways: In Options 2 & 3, Tier II requires that a combination of standards consider all OHM found at the site, and account for multi-media exposures and the effects of mixtures if it is to serve as the sole criterion for a "significant risk" determination. In Option 4, Tier II requires that a combination of standards include a standard for each detected substance in each exposure pathway at each exposure point if it is to serve as the sole criterion for a significant risk determination. The requirement that the combination of standards account for multi-media exposures and the effects of mixtures has been eliminated from Tier II in Option 4.

The second major difference between Option 4 and Options 2 and 3 is another component of the definition of "significant risk". The Option 4 definition reflects an interim alternative approach for the assessment and management of risks associated with multi-media exposures and exposure to mixtures. The management of risk based on "total site risk" per Options 2 and 3 is here replaced with management of risk based on "individual chemical, individual exposure pathway" risk. Significant "individual chemical, individual exposure pathway risk" is defined via existing standards, and where they are not available, via conservative risk management criteria for threshold and non-threshold risks. By using conservative risk management criteria the process in Option 4 attempts to indirectly address the mixtures and multi-media exposure issues.

The differences described here are the result of an effort to maximize consistency in decision-making between the Chapter 21E program and other DEQE programs.

The Option 4 "process" is described below:

B. MECHANICS OF OPTION 4

1. Identify and determine the concentrations in contaminated media, quantify the oil and/or hazardous material at the disposal site and identify other site conditions per Phase II - Full Evaluation (MCP).

2. Determine if Tier I, Tier II or Tier III applies to the disposal site and implement the requirements of the appropriate Tier as described below.

Tier I

Compare Disposal Site Conditions with DEQE Predetermined Clean-up Levels

As in Option 2 and 3, predetermined clean-up levels represent: 1) chemical-specific, medium specific, health-based concentration requirements or, 2) requirements to utilize technology which has been proven to eliminate "significant risk" for a given type of disposal site. A predetermined clean-up level is developed for a category of disposal sites using techniques outlined in Tier III. "Packages" of predetermined clean-up levels would be published for categories of sites. It should be noted that development of these clean-up levels will use the risk assessment/risk management techniques presented in Option 4, Tier III (not Option 2, Tier III).

Few "packages" of health/risk-based predetermined clean-up levels currently exist, but more are presently under development. The following describes the "process" of Tier I.

1. Determine if the Disposal Site falls into a category of Disposal Sites for which there are predetermined clean-up levels. If the site does not, proceed to Tier II.

2. Identify predetermined clean-up levels (PCUL) applicable to the Disposal Site or category of Disposal Site. A list of categories of sites and corresponding predetermined clean-up levels will be developed, published and updated periodically by DEQE.

   Predetermined clean-up levels may be either of two types:

   - Numerical predetermined clean-up levels quantify the amount of OHM which may remain at the site without "significant risk" of harm to health. For a given category of sites there is a "package" of predetermined clean-up levels published by DEQE. Once a site is determined to fall into a category, the "package" is pulled "off the shelf" and is the focus of remedial alternatives development.

   - Technology-based clean-up levels require use of a technology that has been proven effective in eliminating significant risk associated with the type(s) of contamination present at the given category of sites. These categories and technologies would be listed in a DEQE publication.

3. Compare site conditions to requirements presented by predetermined clean-up levels (PCUL).

   - If site conditions (or concentrations) do not meet the requirements of PCULs, a "significant risk" exists and Remedial Action Alternatives which achieve the predetermined clean-up levels must be considered for implementation.

   - If site conditions (or concentrations) do not meet the requirements of PCULs, a "significant risk" does not exist and further action would not be necessary. (The feasibility of

achieving a level of oil and/or hazardous materials that would exist in the absence of the site represents an area for further discussion).

- o If the site does not fall into a category for which predetermined clean-up levels exist, proceed to Tier II.

Tier II

Compare Disposal Site Conditions with a Combination of Standards/Guidelines

This Tier is considered only if the site does not fall into a category for which predetermined clean-up levels exist. In this context, a combination of standards is a group of standards which adequately accounts for exposure conditions at the site. *

1. Determine if a combination of standards exists which adequately accounts for exposure conditions at the site. If no such combination exists, proceed to Tier III.

2. Identify the appropriate combination of standards/guidelines. DEQE will publish and update periodically a list of standards/guidelines which may be part of such combinations. (See Table 1 in Option 1)

3. Compare site conditions (exposure point concentrations) to each of the standards/guidelines included in the appropriate combination.

   - o If the concentration of any site contaminants **at exposure points exceeds standards/guidelines (2. above), "significant risk" exists and Remedial Action Alternatives which achieve each of the standards (2. above) must be considered for implementation.

   - o If the concentration of no site contaminants at exposure points exceed standards/guidelines (2. above), a "significant risk" does not exist and further action would not be necessary. (The feasibility of achieving a level of oil or hazardous materials that would exist in the absence of the site represents an area for further discussion).

* In order to adequately account for exposure conditions at the site, a combination of standards must include a standard for each oil or hazardous material in each exposure medium at each present or reasonable foreseeable point of exposure. NOTE: This combination is not limited to standards which have been developed by specifically evaluating the impacts of multi-media exposures and exposures to mixtures. This is a critical difference between this option and options 2, 3 and 5.

** exposure points are locations at which human receptors are or may reasonably be exposed to oil or hazardous materials from the disposal site.

- o If the site does not have an appropriate combination of standards, proceed to Tier III.

Tier III

Compare Site Conditions to Target Levels

This Tier applies only when the Disposal Site does not fall into a category of Disposal Sites for which there are predetermined clean-up levels and there is no combination of standards/guidelines which adequately accounts for conditions at the Disposal Site.

A Target Level represents the maximum concentration of an oil or hazardous material in a specified medium (air, soil, water, fish etc.) at an exposure point which does not represent "significant risk" A target level is used to determine if a significant risk exists and also serves as a minimum clean-up requirement. A Target Level may be identified in one of two ways: First, all approved existing standards are Target Levels at exposure points. Second, for exposure situations where standards do not exist, the equivalent of a standard is developed by the RP's consultant using the risk assessment techniques and risk management criteria outlined below.

- o Risk Assessment Techniques to be used in developing a target level should incorporate each of the four major components of a "risk assessment": hazard identification; dose-response assessment; exposure assessment; and risk characterization.

- o A guidance document will be produced by DEQE which identifies acceptable risk assessment techniques (including those currently available) to be used in developing Target Levels.

- o Risk Management criteria to be used in developing target levels follow:

A. For each OHM excess individual lifetime cancer risk associated with lifetime exposure to the target level concentration via a single exposure pathway must not exceed $1x10^{-6}$.

and

B. For each oil or hazardous material in air, the target level concentration must not exceed the equivalent of 20% of the Threshold Effects Component of the Allowable Ambient Level (AAL). The document, The Chemical Health Effects Assessment Methodology and Method to Derive Allowable Ambient Levels describes the derivation of AALs. The equivalent of an AAL would only be developed if an "occupational level" is available for the particular OHM.

and

C. For each oil or hazardous material in any medium other than air, the daily intake associated with long-term exposure to the target level concentration must not exceed 20% of EPA's verified Reference Dose *(RfD) or some other value approved by DEQE.

The actual process for implementing Tier III follows.

1. Using the information gathered in the hazard identification and exposure assessment portions of the Phase II Full Evaluation, identify all current and reasonably foreseeable exposure points and the corresponding exposure point concentrations for each OHM in each exposure pathway. A guidance manual, prepared by DEQE will present acceptable techniques for conducting hazard identification and exposure assessment. In the Exposure assessment, measure or estimate present and future magnitude, frequency, location and duration of exposure to oil or hazardous materials for likely receptors (both human and environmental) considering both present and reasonably foreseeable future land use. In other words, identify exposure points and the concentration of each oil and hazardous material within each exposure pathway (exposure point concentrations).

2. Identify and/or develop Target Levels which apply to the disposal site.

3. Compare exposure point concentrations to Target Levels.

   o If any exposure point concentrations exceed Target Levels a "significant risk" does exist and Remedial Action Alternatives which achieve Target Levels for each OHM in each medium must be considered for implementation.

   o If none of the exposure point concentrations exceed the Target Levels, "significant risk" does not exist and no further action is required. (The feasibility of achieving a level of oil and/or hazardous materials that would exist in the absence of the site [roughly background] represents an area for further discussion.

*EPA's verified Reference Doses (RfD) can be found in the Integrated Risk Information System (IRIS) and the derivation of RfDs is explained in IRIS, Appendix A, Reference Dose (RfD): Description and Use In Health Risk Assessments

C. SUMMARY OF ADVANTAGES AND DISADVANTAGES OF IMPLEMENTING OPTION 4

Table 6 - Summary of Advantages and Disadvantages of Option 4.

Advantages	Disadvantages
- can be applied to every site	- The lack of flexibility in remedial design will result in requirements for permanent solutions which are not feasible. Very few sites will be given a clean slate.
- Uses resources efficiently. As program progresses, resource needs decrease.	- Process for evaluating mixtures and multi-media exposures requires more development.
- Addresses impacts of mixtures (indirectly).	- This approach is not completely consistent with current approaches used in permitting activities of divisions within DEQE.
- Addresses to some degree the impacts of multi-media exposures (indirectly).	- Makes remedial design inflexible. May require costly remediation which results in inconsequential risk reduction in some cases.
- Addresses unique site conditions. Requires remediation only for contamination which currently or may reasonably be expected to reasonable be expected to result in human exposure.	- Exposure to mixtures of "threshold" substances may not be adequately addressed.
- Could be implemented March 1, 1988 and as an interim measure be protective of public health.	

I. Option 5

A. INTRODUCTION

The fifth option is the same as Option 3, but with the added requirement that the Department conduct a feasibility study to determine methods for incorporating the refined mixtures and multi-media approaches developed in Option 3 into existing programs throughout DEQE. The Option requires the Department to develop procedures and policies for using approaches similar to Option 3 (Tier 3) for permitting activities within three years.

B. Mechanics of Option 5

The mechanics of Option 5 are the same as those for Option 3, except that over the three-year period commencing with the implementation of the MCP, the Department would also work toward developing a consistent Department-wide policy to address chemical mixtures and multi-media exposures. As the current procedures were being used and refined, the Department could use this experience to identify appropriate mechanisms for using those procedures in other programs.An additional year is provided following the development of the refined techniques discussed in Option 3 to allow the Department more time to implement these policies.

C. Advantages/Disadvantages of Option 5

The advantages and disadvantages of Option 5 are the same as those for Option 3 except: An added disadvantage is that additional resources would be required to carry out the feasibility study; added advantages are that such a study could produce a consistent Department-wide policy, the Department could begin to address the critical issues concerning mixtures and multi-media exposures in a technically refined way over time, and Department experience with actual sites over the next three years could be used to develop sound practices with respect to other Departmental activities.

VII. Option 6

A. INTRODUCTION

The sixth option is a unique option. This option would require that total site risks be estimated at each disposal site using hazard identification, dose-response assessment, exposure assessment and risk characterization techniques as described in Option 2, Tier III. The risk management criteria for total site risk would be the same as those presented in Option 2, Tier III. This option would not utilize predetermined clean-up levels or existing public health and environmental standards.

B. MECHANICS OF OPTION 6

At all sites the need for remediation and the extent of remediation required will be determined using the techniques presented in Option 2, Tier III.

C. SUMMARY OF ADVANTAGES AND DISADVANTAGES OF IMPLEMENTING OPTION 6

TABLE 7 ADVANTAGES/DISADVANTAGES OF OPTION 6.

ADVANTAGES	DISADVANTAGES
- Can be applied to every site.	- Process for evaluating mixtures and multi-media exposures requires more development.
- Addresses impacts of multiple contaminant and multi-media exposures.	- Not consistent with current approaches used in permitting activities of divisions within DEQE.
- Addresses unique site conditions. Requires remediation only for contamination which currently or may reasonably be expected to result in human exposure.	- Site evaluation and remedial design may be very costly.
- Could be implemented on March 1, 1988 and be protective of public health.	- Time required to remediate sites may not comply with schedules contained in Chapter 21E.
- Provides flexibility in remedial design. Provides opportunity for greatest reduction in risk per unit cost.	- Requires a tremendous amount of resources.
- "Permanent solutions" may be feasible at a large number of sites.	

VIII. REQUEST FOR COMMENTS

Comments are requested on all of the options which have been presented. DEQE is particularly interested in comments relative to Options 2, 3, 4 and 5. DEQE requests comments which identify which Option(s) can be immediately implemented and meet the requirements of Chapter 21E. In addition, suggestions for additional options which utilize components of the options already proposed are welcome. Beyond the choice of options, comments are requested on the following topics and issues.

1. At the present time, should the impacts of multiple contaminant and multi-media exposures be incorporated into the Chapter 21E disposal site evaluations?

2. If multiple contaminant and multi-media exposures were to be addressed, which are the best available techniques for doing so?

3. Should all applicable public and environmental standards serve as minimum clean-up requirements at Chapter 21E sites? What if a standard is "applicable", but there is no current or reasonable foreseeable exposure?

4. Some of the options which have been presented make the development of remedial alternatives inflexible. Is this inflexibility an advantage or disadvantage?

5. Some of the options which have been presented suggest that "permanent solutions" may not be currently feasible at many disposal sites. This means that "temporary solutions" will be common. What are the consequences of a system which provides little opportunity for achieving "permanent solutions"?

6. Which of the options have been presented appears to be most cost-effective?

7. All of the options which have been presented focus on individual risk. Is this focus appropriate? Should "population risk" be a component of the site evaluation process?

DISCUSSION PAPER

SITE CLASSIFICATION SYSTEM

Under the 1986 amendments to the Massachusetts Oil and Hazardous Material Release Prevention and Response Act (M.G.L. c. 21E, section 3A(d)), the Department of Environmental Quality Engineering (DEQE) must develop procedures and criteria to determine whether a disposal site is a "priority disposal site". A priority disposal site is defined in the statute as one that constitutes a "substantial hazard to health, safety, public welfare, or the environment if it continues to be present for several years." The purpose of this discussion paper is to inform the public of DEQE's proposed interim site classification system and to identify issues for public comment related to the selection of a final site classification system. The interim site classification system proposed in the Massachusetts Contingency Plan was first issued as policy guidance in June 1987 and has been used by the Department since that date.

Interim Site Classification System

In June 1987, DEQE issued an Interim Site Classification System (ISCS) to provide guidance to DEQE regional offices until a final site classification system is developed. The purpose of a site classification system is to provide criteria to determine if a disposal site poses a substantial hazard and, thus, should be classified as a priority disposal site. The ISCS identifies nine criteria, any one of which, if present, may result in designation as a priority disposal site. (The ISCS is in Section 40.544 of the Massachusetts Contingency Plan (MCP)). These characteristics include:

- Opportunity for access to and direct contact with oil or hazardous materials via surface contamination, open lagoons, drum storage areas or sludges.

- Uncontained, migrating, free-floating oil or hazardous materials in groundwater or surface water.

- Evidence of groundwater contamination at levels exceeding state or federal drinking water standards/guidelines (or detectable levels when no standards/guidelines exist), when the evidence (a) is within a mapped wellhead protection area (Zone II) or, if no wellhead protection area has been mapped, within a ½-mile radius of a municipal water supply well; (b) is found in or is likely to be found in a private water supply well; or (c) is found in or is likely to be found in areas of planned or potential water supplies.

- Evidence of a release of oil or hazardous materials into surface water or groundwater that is upstream of a public water supply intake structure or upgradient of a wellhead protection area or public well recharge area.

- Evidence of a release of oil or hazardous materials to surface water or groundwater that has resulted, or could result, in exceeding an ambient water quality criterion for the protection of aquatic life or human health.

- Threat of a fire or explosion.

- Air emissions that could adversely impact human or environmental receptors, as evaluated by Allowable Air Levels (AALs) or other State/Federal criteria, if available.

- Releases of oil or hazardous materials that could adversely affect the human food chain.

- Any other information that indicates that the disposal site may present a significant or otherwise unacceptable risk of harm to public health, safety, public welfare or the environment if present for several years.

These characteristics are presumed by the Department to represent substantial hazards to health, safety, welfare, or the environment. However, evidence of groundwater or surface water contamination can be overridden as a reason for priority disposal site classification under certain circumstances that are identified in the ISCS. An example of such a circumstance includes no hydrogeologic connection between the release and the water supply well.

Review of Existing Models

DEQE is in the process of reviewing existing Federal and State hazardous waste site ranking and classification models and developing a final classification system. Ranking models assign numerical scores to sites and are used to order sites according to their expected hazard. DEQE examined several models and their suitability for site classification. These included six state models, the EPA Hazard Ranking System and the Air Force Hazard Assessment Rating Methodology. Table 1 provides a summary of the models that DEQE has examined. Before reviewing the various models, DEQE identified four objectives of a site classification model for Massachusetts:

- Tne model should distinguish priority disposal sites from regular disposal sites, as defined in M.G.L. c. 21E, and it should also be capable of further classifying the sites within these two categories.

- The model should perform well using data from the preliminary assessment/site investigation. Examples of such data include information on past and present land use and disposal practices, field observations, existing maps and hydrogeologic data, and possible initial screening and sampling data. The model would not require extensive analytical data.

- Assuming the data are available and have been reviewed, the user should be able to classify a site within a day's time, including documenting the basis for the classification.

- A bachelor's degree in a scientific discipline and hazardous waste-related professional experience should provide sufficient background to use the model.

None of the models reviewed met all of these objectives. Site screening models have inherent limitations in evaluating all of the variables that influence the degree of risk at a disposal site. Trade-offs must be made between the model's level of complexity and analysis, and the level of effort needed (i.e., time to use the model, amount of information on the site needed to run the model, level of user experience).

Options for Site Classification

Recognizing these constraints, four options were identified by DEQE. These options are presented here:

Option 1

Revise the ISCS to be used as a quick screening tool. This option would involve developing more specific definitions and criteria for those situations and conditions identified in the ISCS, and possibly adding other criteria. Any disposal site meeting any one of the specific criteria would be designated as a priority disposal site.

Pros	Cons
Using fairly strict definitions and criteria, could identify most of the disposal sites that truly present substantial hazards.	Classifies sites as either priority or regular disposal sites but does not rank the sites any further within the category (e.g., high, medium, or low priority).
Would meet DEQE's objective on the amount of time and effort required for use.	There are technical and scientific limitations when developing definitions and criteria for use in a quick screening model; this is because of the complex technical nature of assessing hazards (such as potential impacts to groundwater).

Option 2

Same as Option 1 except that the priority disposal sites would be further classified according to the number of ISCS criteria met or the particular

criteria which are met. In Option 1, a disposal site that meets one of the ISCS criteria would be designated a priority site. Under this option, the priority designation could be further broken down into high, medium, and low priority categories depending on the number of ISCS criteria met. For example, a disposal site meeting more than 4 ISCS criteria could be considered high priority while a site meeting only one criterion could be low priority. Instead of placing sites into categories depending on the number of criteria, the Department could also apply different weights or priorities to the particular ISCS criteria. For example, any time the first and third criteria are met, priority designation could be assigned.

Pros	Cons
Same as Option 1 plus allows further categorization within priority site grouping.	Subjective judgments are necessary when assigning priorities to the criteria.

Option 3

Adopt the revised EPA Hazard Ranking System and define a numerical cutoff between priority disposal sites and regular disposal sites. (EPA is currently revising the existing Hazard Ranking System.)

Pros	Cons
The HRS system has undergone extensive review and revisions will correct many of its existing problems. Under the 1986 amendments to the federal Superfund law, EPA is required to revise the HRS so that it ranks sites more accurately according to the relative degree of risks they pose. Considers many of the variables that are related to hazards or potential hazards at a site.	Need to choose cutoff numbers to categorize or rank sites using this scoring model. Will require more time and effort to use than specified in DEQE's objectives. Would probably not be possible to implement with current level of detail available in PA/SI information.

Option 4

Adopt a simplified version of the HRS such as the New Jersey Site Severity Index to rank sites and define a numerical cutoff between priority disposal sites and regular disposal sites.

Pros	Cons
A simplified ranking model provides a systematic method to assess site	A simplified ranking model will provide only crude rankings; could

hazards.	possibly be used to place sites into two broad categories.
Will meet DEQE's objectives with respect to amount of effort required for use.	Need to choose cutoff values to categorize or rank sites using the scoring model.

Numerical Versus Non-Numerical Models

Table 2 lists the advantages and disadvantages of numerical ranking models and non-numerical models. The EPA Hazard Ranking System and the NJ Site Severity Index (Options 3 and 4) are both numerical ranking models. Both systems assign numerical scores to many factors that are related to the degree of hazard at a disposal site (e.g., depth to aquifer and accessibility to site). They also use a formula to calculate a total site score based on the various factor scores. The site scores are then ranked or ordered.

In general, the relative rankings of the total site scores are thought to roughly reflect the degree of hazard posed by a site. EPA believes, for example, that sites with very high HRS scores probably present greater risks than sites with lower scores. Minor differences in HRS scores do not, however, necessarily reflect real differences in the site risks or hazards.

Options 1 and 2 represent non-numerical classification models. Their use would result in the placement of a disposal site into a particular category (e.g., priority disposal site).

Issues in Site Classification

A major issue related to the use of any numerical or scoring model is the selection of a cutoff value for placing sites into categories. The problem with defining a cutoff value or score is assuring that sites having scores above that value constitute substantial hazards and that sites having scores below the cutoff do not constitute substantial hazards.

There are three ways to choose a cutoff value:

1. Select a single score. For example, choose 50 if the maximum possible score is 100; sites with scores above 50 would be priority disposal sites and, below 50, would be disposal sites.

2. Score a large number of sites and choose a cutoff based on the distribution of the site scores. Based on practical considerations, such as Department resources (staffing and budget considerations), select as the cutoff a score above which a certain percentage (e.g., 10%) of all the scores fall.

3. Apply the model to a certain number of sites (e.g., approximately 20) which are well-characterized, ten of which are considered by a group of experts to constitute substantial hazards and ten of which are considered by the group not to represent substantial hazards. Use these scores to choose a cutoff.

The first approach is simple, but is basically an arbitrary approach. The merits of the second approach are that DEQE resources could be efficiently utilized to place a manageable number of sites on a fast track schedule. (Priority disposal sites must be cleaned up within 4 years compared to 7 years for other disposal sites; hence priority sites are on a "fast track" schedule.) However, all site rankings would have to be completed before the cutoff could be defined, and this is not practical. Also, the second approach to choosing a cutoff is not based on public health or environmental considerations.

Only the last approach allows for the selection of a cutoff based on the relative degree of hazard posed by the disposal site. This approach requires a fairly high level of effort and assumes that detailed information on 20 or so sites is available. This information would have to be compiled and summarized for use by the group of experts. For the models shown in Table 1, states have chosen not to select cutoff scores but rather to simply rank or order their sites based on the total site score. Resources are directed first to the sites that are highest on the list.

Another problem related to the use of site screening models is the frequent lack of information on disposal sites at the time of site ranking or classification. Under 21E, site classification is performed after an initial site evaluation (Phase I study) but before a complete investigation (Phase II study). This means that the amount and type of contaminants present at the disposal site may not be known at the time of site classification. A related issue is whether the Department should assume, when little information is available, that a substantial hazard exists or whether it should designate a site as a priority disposal site only when available information indicates a substantial hazard exists. The advantage of the first approach is a reduced chance of overlooking a substantial hazard; its disadvantage is overclassification of sites as priorities and failure to focus on the most problematic sites. The advantage of the second approach is its ability to focus on those sites that truly pose a substantial hazard; its drawback is the possible allowance of a longer time frame (7 years instead of 4 years) to investigate and clean up sites that could be substantial hazards.

Public Comment

The Department would appreciate receiving comments from the public on site classification. In particular, it solicits comments on:

- The strengths and shortcomings of the Interim Site Classification System.

- As a final site classification system, whether a non-numerical model based on the Interim Site Classification System or a numerical ranking model such as the revised HRS should be adopted.

- The method for choosing a numerical cutoff to place sites ranked by a numerical ranking model into categories.

- The four specific options discussed in this paper.

Discussion Paper

The "Adequately Regulated" Waiver

1.0 Introduction

M.G.L. c. 21E contains interrelated definitions of "site", "disposal site", and "release". These definitions are broad and their application to releases of oil or hazardous materials in the operative sections of the statute (§§ 4, 5, 8) are encompassing. Considering these definitions and the broad authority of M.G.L. c. 21E, almost any location where contaminated oil or hazardous material "has come to be located" could be considered a "site" subject to assessment and remediation under M.G.L. c. 21E. This broad applicability of 21E could potentially overwhelm the program and lead to the inclusion of situations under 21E that could be regulated under another authority equally as well, and in some cases, more quickly. The regulation of situations under more than one authority or program could result in compliance difficulties, unnecessary duplication of effort, and coordination and management entanglements. It would therefore appear desirable to clarify the applicability of 21E.

This issue paper discusses how the Department could limit the applicability of 21E, based on M.G.L. c. 21E §3(c), which states that regulations promulgated under its authority may:

> "Include provisions waiving or limiting the applicability of this chapter as to any matter which the Department determines to be adequately regulated by another program or government agency".

2.0 Issues

Environmental contamination in the Commonwealth that has historically been dealt with by a variety of Agencies, Departmental Divisions, programs and statutory authorities may also be subject to 21E. For example, air emissions from a facility must be permitted, and violations of such permits are redressed through enforcement under authority of M.G.L. c. 111 §§142B-F. Similarly, public water supplies undergo compliance monitoring and enforcement action under the authority of M.G.L. c. 111 and M.G.L. c. 21. Both of these situations are clearly regulated under the referenced authorities, however, M.G.L. c. 21E and the MCP may be applicable as well.

Solid waste issues are not as clearly segregable from 21E response authorities. Currently, solid waste landfills are handled by the Division of Solid Waste under the authority of c. 111 §150A, unless there is some reason to believe that oil or hazardous materials were actually deposited in the landfill. If oil or hazardous materials is emanating from a landfill, the landfill could be considered a Chapter 21E "site", regardless of what is known about disposal.

The Department has historically made a case by case judgement as to which statutory authority and which Departmental Division should regulate landfills.

Under M.G.L. 21E §4, with limited exception, the Department can take a response action whenever it has reason to believe that oil or hazardous material has been released or is threatened to be released. Almost any environmental contamination by oil or hazardous material identified in routine compliance monitoring (air, wastewater, drinking water) could be sufficient to initiate listing and a response action under 21E.

The potential expansive authority of M.G.L. c. 21E could represent a tremendous burden on the program and potentially responsible parties in terms of the numbers of locations that could be considered potential disposal sites. Many facilities or locations with releases currently regulated under other authorities could also be subject to Chapter 21E requirements and schedules. A fundamental question is how to remediate contamination situations most effectively and quickly.

3.0 Options

There are two basic alternatives for defining the applicability of 21E to situations that may also be regulated under other authorities. One alternative is to allow waivers, where those situations that are waived from applicability to 21E would be regulated under other authorities. These situations would not be subject to 21E requirements. The definition of what is meant by "adequately regulated" is an important factor in determining the impact of this alternative. It could mean those regulatory authorities that achieve the same level of protection of health, safety, welfare, and the environment in a similar time frame. On the other hand, it could simply mean that a regulatory authority exists for a given type of situation, regardless of its objectives and schedules or their comparability to those of 21E. The more stringent defintion would minimize the impact of waivers, but could be somewhat ineffective in limiting the applicability of 21E.

The other alternative the Department has is to keep the applicability of 21E broad and allow no waivers. Four options are presented below. The first three represent options for the implementation of waivers using different mechanisms and the last option proposes that the Department not utilize the "adequately regulated" waiver.

The options the Department is considering to define and implement the concept of "adequately regulated" are described briefly below:

1. Specific Delineation of Situations that are Adequately Regulated By Another Department Division or Government Agency

   Specify in the MCP, the situations or types of situations that would be considered "adequately regulated" by another Division or Government

Agency. Situations that are exempted from 21E would not be subject to any of the deadlines, submissions, approvals, public participation requirements, or clean-up objectives or standards specified in the statute or the MCP. The implementation of this option requires the identification and determination of which situations should be specified as adequately regulated. Once these situations are defined, however, implementation of the exclusions would not be difficult, as it would be clear what situations the Department considers best regulated under authorities other than 21E. This option may have disadvantages, in that it will provide limited flexibility in dealing with "adequately regulated" situations. In some cases, it may be desirable to use the response action and cost recovery authorities under 21E, when these authorities are not provided under other statutes. Provisions could be made within this option for utilizing 21E authorities in specific situations.

2. Generic Description of Situations that are Adequately Regulated.

Specify in the MCP criteria for determining which situations would be considered adequately regulated and exempt from 21E requirements. For example, one criterion could be that the situation can (under other authorities) be remediated within time frames consistent with 21E. A number of such criteria would have to be developed and Departmental determinations of "adequately regulated" would then be made on a case-by-case basis and would allow the consideration of site-specific conditions. This option would have somewhat more flexibility than Option 1, as the criteria could be set up to regulate a type of situation under 21E in some cases, but by another authority under different conditions. The implementation would be more time-consuming than option 1, as determinations would have to be made on a case-by-case basis.

3. Development of the Adequately Regulated Concept through Policy.

Specify in the MCP that situations that are "adequately regulated" will be exempt from 21E requirements. However, identification of specific situations or criteria for adequately regulated exclusion would then be described by the Department in guidance or policy. This option would present the same advantages and disadvantages as described in Option 2. It would provide somewhat more flexibility to the Department in determining and changing what is considered adequately regulated. This option would most closely represent the Department's current 21E practices.

4. Departmental does not use the Adequately Regulated Waiver

Option 4 is quite different from the preceeding three in that all of those situations which qualify as a release or threat of release would

be regulated under Chapter 21E. The MCP would state that all situations to which 21E is applicable shall be handled under that authority. These situations would be investigated and remediated under the 21E authority either by a variety of Department Divisions or totally by the Hazardous Waste Division. Other Divisions or Agencies would be required to comply with the requirements of 21E, including the MCP deadlines, submissions, approvals, public participation requirements, as well as clean-up objectives or standards. Implementation would be difficult for the other Department Divisions and Agencies, as they may tend to be focused more on media-specific environmental regulations than hazardous waste site cleanup. The overall management of such a decentralized program would be cumbersome and difficult to monitor. This option would also represent a major change in the Department's current approach to its various Divisional responsibilities. However, if the Division of Hazardous Waste were assigned to respond to all the potential 21E sites, the Division could become totally overwhelmed by the large number of sites to be assessed and remediated. This option is intended to achieve a totally consistent treatment of all potential sites, which could be considered an advantage. The mechanism could be counterproductive if situations that could be quickly and easily dealt with by another program are held to the requirements and time frames of 21E.

4.0 Questions for Comment

The Department seeks comments on the options presented above, as well as any specific suggestions as to which situations or types of situations could be considered "adequately regulated".

DISCUSSION PAPER

TECHNICAL ASSISTANCE GRANTS

1.0 Introduction

M.G.L. c. 21E §14(c) provides that:

> Subject to appropriation, the Department may provide for limited grants to be given to any group of individuals who may be affected by oil or hazardous materials from any disposal site. Any recipient group shall use such grants to obtain expert advice and technical assistance on matters relating to the handling of disposal sites pursuant to this chapter. The Department shall promulgate by November 6, 1987 regulations specifying the terms and conditions of eligibility and use of such grants.

Regulations which establish a technical assistance grant program are proposed in Subpart F of the draft Massachusetts Contingency Plan. In developing these proposed regulations, the Department aims to provide citizens with resources to encourage and assist public participation in the planning process for responses to releases of oil and hazardous materials. By providing access to expert advice and technical assistance, these grants will:

- encourage affected individuals to acquire and make use of information which will enable them to participate more effectively in the site remediation process, and

- allow affected individuals to address issues of concern related to the disposal site.

Under these proposed regulations, local applicant groups will be eligible for individual grants of up to $10,000 to hire experts to assist them in carrying out the detailed review, interpretation and/or critique of technical documents and information, and in informing the public of the results of these efforts. In turn, the public can more effectively become involved in the public participation process set forth in the draft Massachusetts Contingency Plan. $500,000 of the $60 million 21E bond fund has been designated for this grant program to be distributed in semi-annual funding rounds.

The proposed regulations were developed by the Department with the assistance of the Superfund Advisory Committee. In discussions with the Committee, several issues emerged:

- what groups should be eligible for funding, and what legal status would be required of eligible groups?

- what activities should be eligible for grants?
- what should the maximum grant amount be?
- how should grant funds be distributed among disposal sites?
- what type of application process would best provide for technical assistance at key times in the response planning process?
- how should grantees be selected from the pool of applicants?
- what qualifications for "experts" should be established, if any?

Each of these issues is discussed briefly below, and the corresponding proposed regulations are summarized. The Department invites comments on these and any other issues pertaining to the Technical Assistance Grants during the public comment period for the Massachusetts Contingency Plan.

2.0 Issues

2.1 Eligible Grantees

Under M.G.L. c. 21E §14, a group must be composed of individuals who are affected by a disposal site to be eligible to apply for a technical assistance grant. This criterion for eligibility has raised several questions that must be answered in developing regulations, including how to define "affected individuals," and what types of groups should be eligible for grants. Each of these questions is discussed briefly below.

Affected Individuals: The definition of "affected" could range from those who can prove personal effects to those who may experience impacts in a broader way with fewer tangible or measurable effects.

Recommendation: The proposed regulations identify an "affected individual" as anyone who "experiences or may experience significant environmental, health, or economic impacts as a result of his or her relationship to a disposal site." This definition is intentionally open, since the determination of affected individuals may only become clear as a result of the technical assistance, or upon the analysis of data gathered after a grant application has been submitted.

Eligible Groups: Both the Superfund Advisory Committee and the Department agree that the regulations should favor groups representing the broadest possible coalition of affected parties (including but not limited to individual residents, organized groups of citizens, public interest groups, and business organizations), with a special emphasis on groups with a grass-roots base. To be eligible, groups should not restrict any affected individual from meaningful involvement or participation in the group. The Department hopes to provide funding to citizen groups that include as many related interests of affected

individuals as possible, in order to make technical assistance available to the broadest possible audience. In line with this policy, grant applications should reflect the maximum possible citizen input.

Recommendations: The proposed regulations render ineligible any group which restricts the meaningful involvement or participation of any affected individual. In addition, the grant application process provides for the Department to issue a community-wide notice of applications received and an opportunity for any affected individuals to contact (and join) the applicant groups. Furthermore, the proposed grant application rating system favors applicant groups which represent broad community interests.

Ineligible Groups: According to the statute, "groups of individuals" are eligible for technical assistance grants. Therefore, municipalities and their agencies, and other governmental entities, are barred as applicants, since they are not legally considered individuals. However, elected and/or appointed officials could participate in a group applying for funds if they did so as individual citizens, rather than in their official capacities.

Whether potentially responsible parties may receive technical assistance grants is another question that has been raised. M.G.L. c. 21E clearly assigns the costs of assessing, containing, and responding to releases of oil and hazardous materials to the parties liable for the release. Rather than providing funding for these parties to undertake response actions, the law clearly directs them to pay (and if state funds are used, DEQE has authority to recover up to three times its costs from the responsible parties). Therefore, it appears that potentially responsible parties should not be eligible for technical assistance grants.

Recommendation: Municipalities and their agencies, and potentially responsible parties, would be ineligible for technical assistance grants. However, elected and appointed officials and representatives of potentially responsible parties may participate in groups which are eligible for grants.

Legal Requirements for Eligibility: Many local groups are loosely organized, and may not be incorporated or have other legal status recognized by the Commonwealth. However, state procurement policy states that to receive funds from the Commonwealth, a grantee must be a legal entity. This procurement requirement protects the Commonwealth, in that expenditures can be tracked and responsibility for ensuring proper disbursement of funds is clearly defined. It also protects the recipients of funds, who might otherwise be personally liable for misuse or other problems. Given that the procurement requirements make groups which are not "legal entities" ineligible for grants, several options could be exercised by the state including:

- a requirement that a group be incorporated at the time it applies for technical assistance funds;
- a requirement that a group become incorporated by the time that the grant is actually is awarded (but not necessarily at the time that it makes the initial application); or

- allowing any applicant which is not incorporated to designate a "fiscal conduit" which is legally authorized to accept funds from the Commonwealth. This fiscal conduit would be legally responsible for managing and accounting for funds, but the citizen groups would have the authority to conduct the technical assistance activities.

The Department believes the first option to be more restrictive than necessary, and to place an undue burden on citizen groups which would have to incorporate before receiving any indication as to whether their application for technical assistance funds would be successful. The third option can lead to confusion in distributing responsibilities and does not, in the Department's view, provide sufficient assurance that those responsible for spending grants funds will be able to properly account for their expenditures.

Recommendation: Therefore, the proposed regulations require that a grant recipient be incorporated by the time that its grant is awarded (i.e., when a contract is executed), but not necessarily at the time of application.

2.2 Eligible Activities

A number of activities are generally accepted as falling within the definition of "expert advice and technical assistance". These include:

- review of scopes of work, sampling plans and other descriptions of specific tasks in addressing, evaluating, and cleaning up disposal sites;

- interpretation, assessment, and review of technical reports (as prepared by potentially responsible parties, the Department, or other entities);

- public education activities designed to acquaint the public with the results of the above activities, or other information concerning the site remediation process; and

- obtaining legal advice related to citizens' rights in the site assessment and cleanup process.

However, there are differing views on whether technical assistance grants may be used by grantees to develop new data concerning a disposal site. Such new data could describe environmental, public health or welfare effects of the disposal site upon affected individuals. Proponents of this approach argue that to ensure maximum public confidence in information, and to ensure that work considered critical by the public is accomplished, the public should have the right to generate information on its own through these grants, and to use that information to convince the Department to expand or redirect its inquiries about a disposal site.

The Department believes strongly that the development of data concerning a disposal site is the obligation of the Department or the potentially responsible party/ies, and that there should be one set of comprehensive studies for a given disposal site. The draft Massachusetts Contingency Plan provides for involvement by the Department, potentially responsible parties, and the public in the process of preparing these studies, to ensure that high levels of technical quality are achieved and that public concerns about the disposal site are addressed. Rather than using the technical assistance grants to produce new data, these grants could be used by citizens to generate comments on (and thus influence) the types and quality of data that are gathered and analyzed. When the Department agrees that specific additional data should be gathered and analyzed, then the Department believes that the potentially responsible party or the State Superfund (but not these grants) should pay for this effort.

Recommendation: The proposed regulations allow grants to be used only for activities dealing with information developed by a potentially responsible party, the Department, or another source, and not for the generation of new data by the citizen group.

2.3 Funding Level

The Department plans to make $500,000 available from the $60 million added to the State Superfund in 1987. This sum is intended to fund technical assistance grants until additional funds may be made available by the Legislature (the $60 million bond fund authorized in 1987 is expected to be obligated in 2-3 years). At least two options have been discussed for disbursing the $500,000:

- a few large (e.g., $50,000) grants could be awarded; these would be targeted toward the largest and most complex disposal sites.

- small grants (e.g., $10,000) could be made to groups at a larger number of disposal sites; these grants would provide technical assistance over one or two phases of the site assessment and cleanup process, and additional funds could be made available for subsequent phases.

The first option would focus the technical assistance program on the disposal sites which are considered to represent the most significant threats to public health, safety, welfare and the environment. The second option would provide smaller fewer resources to these large complex sites, but would distribute funds to a much larger number of disposal sites.

Recommendation: The proposed regulations include a cap of $10,000 on individual grants for the program's first year. This cap would distribute funds to a minimum of 50 disposal sites, while ensuring that each grant will provide sufficient funds for reasonable technical assistance activities.

2.4 Distribution of Funds Among Disposal Sites

With a maximum grant of $10,000, $500,000 will provide funding for about fifty technical assistance projects. Since the Department has confirmed releases of oil and hazardous materials at more than 800 locations (as of October 15, 1987), it is clear that the technical assistance grants program cannot provide funding at all disposal sites. Two issues have been identified in determining how to distribute grant funds among disposal sites -- whether (and how) to focus funds on some group of disposal sites (e.g., sites classified as priority disposal sites), and whether to allow more than one grant per site. Each issue is discussed briefly below.

Focussed Funding: Funding technical assistance at sites with more serious environmental implications (such as those classified as priority disposal sites) would recognize the public health, safety and environmental impacts of a site. At the same time, public interest and involvement is often as great at sites which pose less serious threats, but which are highly visible in the public eye. The need for technical assistance can be viewed as a function of citizens' concerns as well as of the site's complexity. At least three options are available to target grant funding to sites which are judged by the Department or the public to be of greatest concern:

- limit funding to sites classified as priority disposal sites (see proposed 310 CMR 40.544 for criteria for this classification);

- limit funding to sites which are designated as Public Involvement Priority Sites (see proposed 310 CMR 40.200 for a definition of this term); or

- identify disposal sites which will receive technical assistance grants on the basis of applications submitted, with preference in evaluating applications for sites which are of greatest public concern.

Recommendation: The proposed regulations do not limit funding to either priority disposal sites or to Public Involvement Priority sites. Rather, the regulations allow applications to be submitted for any confirmed disposal site. The evaluation criteria reflect the importance both of sites with serious impacts, and of those with the greatest public concern. At the same time, any site for which a technical assistance grant is provided will automatically become a Public Involvement Priority site, to ensure that the grants will forward public involvement in response planning.

Number of Grants Made For Each Site: Many citizen groups have been formed to focus on a single or limited number of issues, which may not encompass all of the problems presented by a disposal site. It is probable that the Department will in some cases receive applications from multiple groups for different technical assistance projects at a single disposal site. At the same time, even with a $10,000 cap on individual grants, funding will only be available for some fifty projects under the current bond authorization.

Providing funding for more than one group at a single disposal site would recognize the political realities of separate specialized groups. However, it would not encourage involvement of the wider public in response planning for the disposal site, and would discourage the formation of umbrella groups which encompass all affected parties. Funding multiple groups at a single disposal site would also reduce the number of sites for which funds will be available.

Recommendation: The proposed regulations specify that only one grant will be made for any disposal site at any one time. Single grants can provide technical assistance for a variety of issues: for example, a single grant could fund experts in both hydrogeology and in air quality. Groups will also be allowed to apply for funds more than once (in subsequent funding rounds), so that if a technical assistance grant does not cover the entire response planning process, additional funds may be made available in subsequent funding rounds.

2.5 Application Process

Technical assistance grants should be made available on a schedule that supports technical decision-making, i.e., when technical documents (including scopes of work) are ready to be reviewed. Since the response planning process conducted by the Department for disposal sites is accomplished through a series of phases (in which each study defines the next), the outcome and schedule of the planning process is often difficult to predict at the outset or when a disposal site is confirmed.

In developing the technical assistance grant program, two basic issues concerning the application process were raised:

- whether to accept applications in defined cycles of funding (e.g., twice per year), or to accept applications on a rolling or continuous basis as long as funds are available; and

- whether to use all the funds that will be made available from current bond authority in one funding cycle, or to reserve some funds for subsequent cycles.

Each of these issues is discussed briefly below.

Funding Rounds: Two options have been considered in establishing an application process which recognizes the difficulties in predicting timing and results of site assessment studies:

- Applications could be submitted and evaluated on a rolling basis with no set deadlines for consideration; an application could be developed and submitted at any time that a need for technical assistance is identified, and grant decisions would be made on a "first-come, first-served" basis.

- Set deadlines could be established for receiving applications; applications would then be reviewed and compared against all others received at the same time, and grant decisions made on the basis of th need for technical assistance demonstrated at an individual disposal site as well as the actual and potential impacts of each site on public health, safety and the environment.

While a rolling grant process could allow for more prompt decisions on individual applications, it would not allow the Department to decide which disposal sites (of those for which applications are submitted) most merit technical assistance grants. Choices would be complicated by the fact that the Department does not know what disposal sites will be identified in the future. Also, to facilitate ease administration of this program at a time when the Department's site assessment and cleanup responsibilities are expanding rapidly, it will be necessary to set some time limits on the application process. Such limits would provide a degree of predictability to Department staff who must review and evaluate all proposals submitted.

Reservation of Some Funds for Future Cycles: The full amount of $500,000 could be made available for grants in the first funding cycle on a first-come, first-served basis, or funds could be made available on a staggered basis over the anticipated life of the current bond authorization. Immediate allocation of the full amount of available funds would focus on immediate needs for technical assistance, but would not recognize future sites, issues, or groups that might arise later in the life of the current bond authorization. Options for resolving this issue are:

- provide funds to all acceptable and deserving applications received in the first application cycle up to the full amount of available funds, limited only by the Department's capacity to manage the volume of grants, and the quality of applications received. Any remaining funds would be distributed similarly in subsequent cycles of funding; or

- designate a predetermined portion of the $500,000 to be made available from the current bond fund for the first funding cycle of the program, and designate specific portions of available funds for subsequent cycles.

Recommendation: Since there are already more than 800 confirmed disposal sites, many of which have generated widespread public concern, the proposed regulations use the first option, which is believed to provide maximum flexibility in meeting public needs for technical assistance as defined by applications submitted to the Department, while recognizing that the Department's administrative resources may limit the number of grants in any funding cycle.

Recommendation: The proposed regulations establish two rounds of funding each year. The application process specified in the proposed regulations requires the Department to evaluate and rank all applications submitted in a

given funding round, and to publish a grant funding priority list which establishes the rank given to each submittal. Funding will be provided to projects in descending rank order up to any limits imposed by the Department's capacity to manage a given number of projects, the quality of applications received, and the availability of funds. Unsuccessful applicants will be able to apply for funding in subsequent rounds (six months later), as will successful applicants desiring to submit applications for new projects. Exhibit 1 provides an illustration of the process for submitting applications for a funding cycle according to the proposed Massachusetts Contingency Plan.

2.6 Evaluation Criteria

As with other grant programs, a system for evaluating and ranking applications must be established. A variety of rating schemes have been discussed:

- setting one (or more) minimum criterion which must be satisfied for further consideration of the proposal,
- assigning specific weights to evaluation criteria, and reviewing applications against all criteria to rank proposals; or
- deciding first on disposal sites which merit funding and then selecting among the groups which have applied for technical assistance at each of those disposal sites.

Recommendation: The proposed regulations include an evaluation system which breaks down each of the major considerations -- technical issues surrounding the site, community needs for technical assistance, and feasibility of proposed projects -- into component criteria, and assigns points to each proposal based on the extent to which a proposal satisfies each criterion. This system should provide a balance among the variety of elements that are significant in weighing the merits of grant applications.

2.7 Grantee Selection

DEQE has the sole responsibility to select grant recipients, and may not delegate this responsiblity to other organizations (including members of the public). At the same time, the Department feels that the grantee selection process could benefit from the assistance of public review. Suggestions have included appointing representatives of the public to participate in DEQE's proposal review committee, establishing a nonbinding Evaluation Committee composed of members of the public which would recommend proposals for funding, and establishing a Grant Review Advisory Committee to assess the degree to which DEQE decisions concerning grant selection follow the criteria contained in the program regulations.

State conflict of interest requirements and Department policy concerning the use of Advisory Committees prevent such Committees from advising the

Department concerning the disposition of specific cases (concerning either enforcement or grants). To avoid the appearance of any conflicts of interest, the Department has limited the role of all of its Advisory Committees to matters of general policy.

Recommendation: The proposed regulations establish a Grant Review Advisory Committee, which would evaluate the Department's selection of grantees before decisions become final, to comment on whether the Department has followed the process and criteria provided in the regulations. In this way, public input can be provided before decisions are final, but the issues to be considered by an Advisory Committee will remain policy-related, and will not focus on the disposition of individual applications.

Appointees to such a Grant Review Advisory Committee would have to have no past, current or foreseeable conflicts of interest with the grant program -- i.e., past or present involvement with any of the disposal sites for which applications have been submitted. The Department proposes to appoint a Grant Review Advisory Committee that will consist of a pool of members, of whom some will be asked to review the selection process for any given funding cycle.

2.8 Qualifications of Experts Providing Technical Assistance

Recommendation: To provide citizen groups with flexibility in retaining experts while ensuring that the experts are qualified to advise in their specific field, the proposed regulations require that experts' credentials be submitted with an application for funds. However, the proposed regulations do not mandate specific qualifications that such experts must demonstrate before they can be hired by the citizen group. Rather than set minimum requirements in these regulations, the Department prefers to publish guidance for citizen groups considering the hiring of experts. This approach would aid groups in their selection of appropriately qualified experts without establishing a predetermined "list" of experts whom the Department has judged to be qualified.

3.0 Questions for Comment

The Department invites public comment on each of issues raised above identified below. In addition, comment is invited on any other issues concerning technical assistance grants.

3.1 Eligible Grantees

- Does the definition of "affected individual" adequately describe those members of the public who should be the recipients of technical assistance?

- Given the statutory language on groups of individuals, how could or should representatives of municipalities and potentially responsible parties be able to participate in broadly-based citizen groups that may be eligible for technical assistance grants?

3.2 Eligible Activities

- Should the development of new data be eligible for technical assistance grants in this program?

3.3 Funding level

- Should the Department establish a cap or maximum grant amount?
- If so, is $10,000 an adequate amount with which to undertake a technical assistance project?
- If not, what would an adequate cap be?

3.4 Distribution of Funds Among Disposal Sites

- Should technical assistance grants be limited to sites which are classified as priority disposal sites?
- Should technical assistance grants be limited to sites which are designated as Public Involvement Priority Sites?
- Should more than one grant be provided to a single disposal site at any one time?

3.5 Application Process

- Should some funds be reserved for technical assistance grants in subsequent funding rounds or years? If so, how much?
- Should a rolling application process be established, or should funding rounds with specific deadlines for applications be established?
- If funding rounds are to be established, what time periods are appropriate (e.g., quarterly, semi-annually, etc.)?
- Will the proposed "List of Applications Received" serve to provide adequate notice to affected individuals who may wish to participate in a technical assistance grant?

3.6 Evaluation Criteria

- Do the criteria proposed to evaluate applications adequately reflect factors that should be considered in selecting among competing applications? If not, what criteria should be added or deleted?
- Does the proposed weighting scheme adequately reflect the relative importance that should be attached to each criterion? If not, how could it be improved?

3.7 Grantee Selection

- What need, if any, is there for public input in the process of selecting grantees? Does the proposed approach provide adequate opportunities for public involvement without creating opportunities for conflicts of interest?

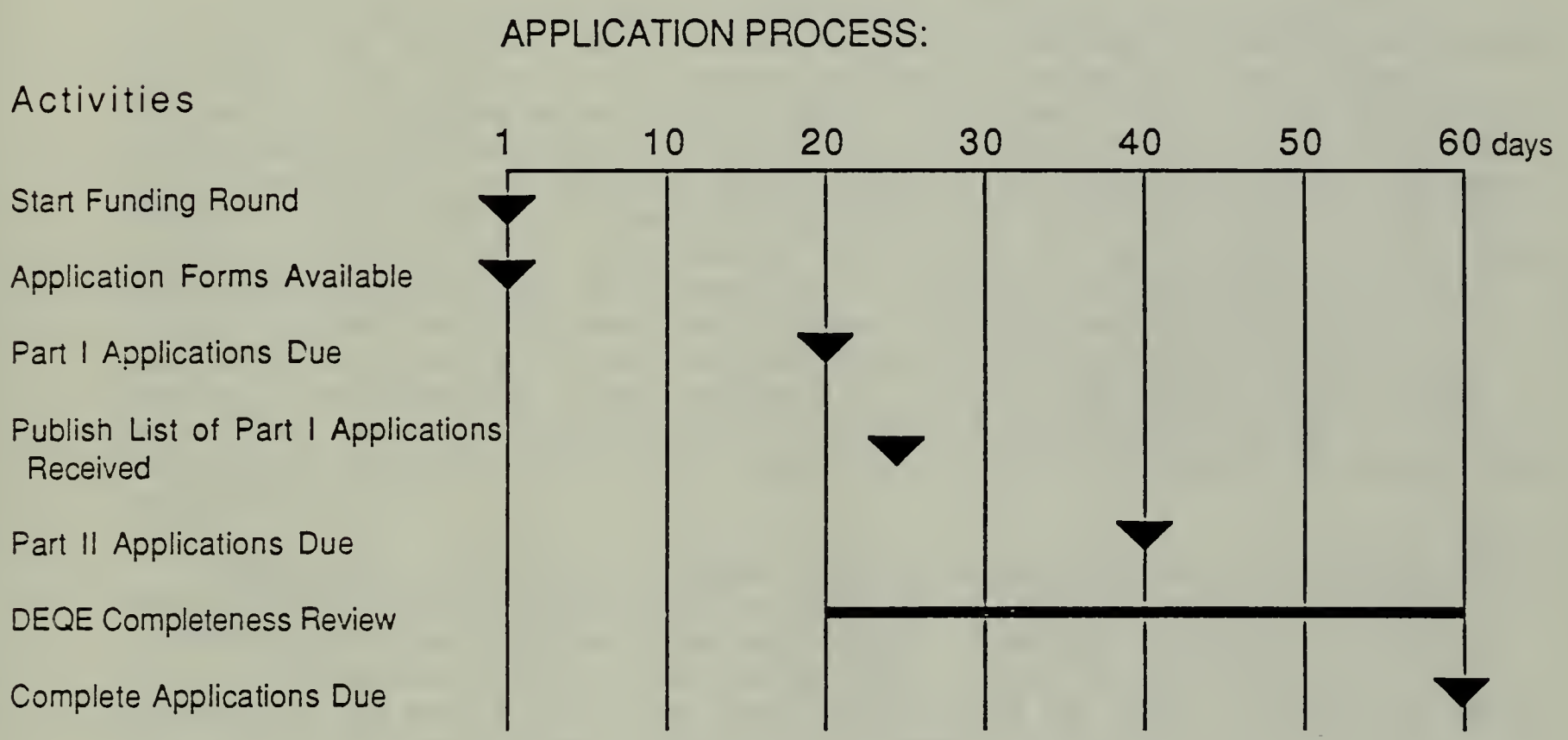
3.8 Qualifications of Experts

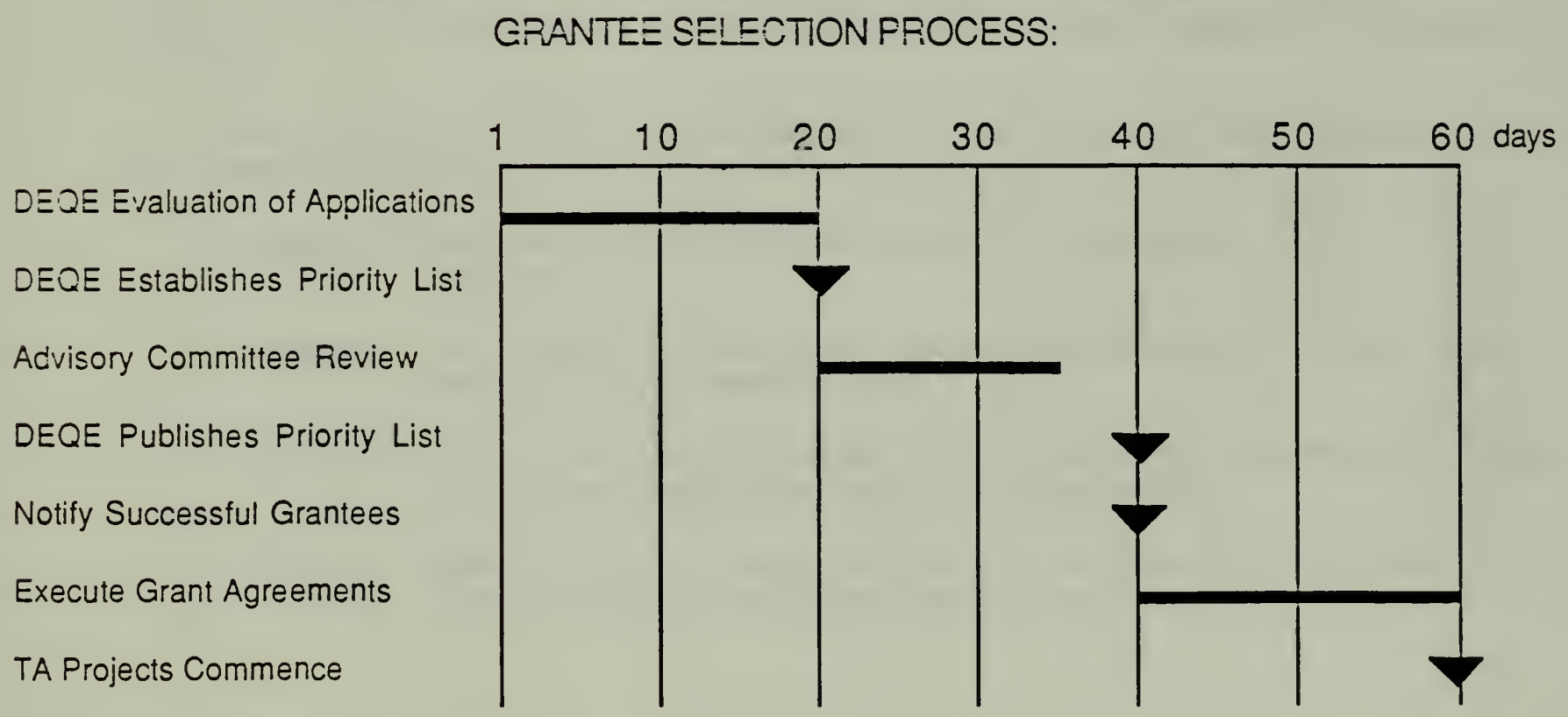
- Should the regulations establish qualifications that must be met by all experts or providers of technical assistance receiving funding from this program?

- If not, will citizen groups desire assistance in this area? If so, what type of guidance would be helpful?

EXHIBIT 1

PROPOSED TECHNICAL ASSISTANCE GRANT APPLICATION AND SELECTION PROCESS





DISCUSSION PAPER

PUBLIC INVOLVEMENT

1.0 Introduction

In responding to releases and threats of release of oil and hazardous materials, the Department of Environmental Quality Engineering (DEQE) has worked with local officials, interest groups, business organizations, and community residents who have expressed concerns about site remediation. In the past, the ways in which DEQE has involved the public in the site remediation process have varied according to the level of public interest in a particular site. At some disposal sites, DEQE staff have met with local officials to inform them of the status of planning and/or construction activities. At other disposal sites, the Department has sponsored public meetings to explain site conditions and plans, or has attended meetings sponsored by local organizations and residents. At some sites, the Department has assisted communities in establishing citizens advisory committees which meet regularly to discuss site planning and related activities. For all disposal sites, DEQE makes its files (excluding enforcement-sensitive information) available for public review at its Boston and regional offices.

While these activities have been useful, local officials and citizens have been particularly concerned about the creation of routine opportunities for public input to the response planning process. The 1986 amendments to M.G.L. c. 21E created specific requirements for DEQE to provide information to communities at the end of each site investigation, and for DEQE to respond to petitions from citizens requesting public involvement in response planning for individual sites. The draft Massachusetts Contingency Plan proposes regulations for implementing these statutory requirements and for resolving additional public involvement concerns that were raised by the Superfund Advisory Committee. The Department is soliciting comment on these issues prior to promulgation.

Issues raised in developing draft regulations for public involvement in site remediation are:

- Issue 1: What are the objectives of public involvement in site remediation?
- Issue 2: What specific activities should be conducted to involve the public in site remediation?
- Issue 3: Who are the target audiences for public involvement activities (i.e., how should the "public" be defined)?
- Issue 4: What is the role that responsible parties could and should play in public involvement activities?

° Issue 5: How should the Department handle enforcement-sensitive and other potentially confidential information?

Each of these issues is discussed briefly in this paper. The Department welcomes comment on these issues as well as any other public involvement concerns.

2.0 Issue 1: Objectives of Public Involvement Efforts

At some disposal sites for which the Department has conducted public involvement activities in the past, discussions have been marked by public concerns with the pace of response planning and the availability of information about conditions at a site. Controversies have frequently resulted from difficulty in understanding scientific information about the nature, extent, and effects of contamination (which may differ from popularly-held concepts), about the technological options available to remedy the situation, and about legal and scientific issues that constrain the selection of a remedy. For example, some decisions to contain and/or treat contaminants in place, rather than removing them to an off-site facility, have rested uneasily with the community which bears the long term effects of the site and its remedial actions.

No protocol for public involvement can be expected to resolve all concerns with the process for response planning and implementation. However, public participation activities must be aimed at reducing the dissonance between public fears about the site and the Department's need to make legally defensible decisions based on the best scientific information available. From this overriding goal for public involvement, specific objectives can be established. One type of objective deals with how information about disposal sites is provided to communities. Another type of objective deals with active public involvement in response actions and the role of the public in decisionmaking. Each type of objective is discussed below.

Provision of Information

The 1986 amendments to M.G.L. c. 21E clearly require that the Department prepare public notices at the end of each site investigation, indicating whether a release of oil of hazardous materials was confirmed, and if so, whether the site is classified as a priority disposal site. In addition, the Department must also explain how the public may obtain additional information about the disposal site and how to participate in response planning.

The Superfund Advisory Committee has stated a belief that the public must be well-informed about conditions at a site in order to comment effectively on cleanup plans. Therefore, the Commmittee recommends that the Department expand its activities beyond the statutory directive, and include informing the community about risks associated with releases; the status of ongoing planning efforts; applicable laws and regulations; remedial technologies that are being considered; and opportunities for commenting on specific proposals for remedial actions.

The Role of Public Involvement in Decision-making

M.G.L. c. 21E §4 authorizes the Department to make decisions about responses to releases of oil and hazardous materials. Past controversies about individual disposal sites have raised the issue of what entity has authority for making final decisions about response actions: communities have argued that since they have to cope with the impacts of a disposal site over the long term, they should participate in the Department's decision-making process.

The 1986 amendments to M.G.L. c. 21E recognize this desire, and require that public involvement plans include opportunities "to comment to enable [the affected community] to affect decisions regarding response actions..." The Superfund Advisory Committee requested that the role of the public in response decision-making be further clarified to promote realistic expectations on the part of the public about how its input will be used.

Recommended Objectives of Public Involvement Efforts

M.G.L. c. 21E clearly provides DEQE with final decision-making authority for response actions. Therefore, the draft MCP defines "Public Involvement" as a process for identifying public concerns about a site and proposed remedial actions, and for factoring these concerns into planning an appropriate response. DEQE will actively seek public comment in the belief that the quality of the Department's site decisions will be improved as a result of public involvement.

The draft MCP sets forth two objectives of public involvement activities:

- to inform the public about the risks associated with a release or threat of release of oil or hazardous materials; about progress toward responding to the release; about information on applicable laws, regulations, and remedial technologies; and about opportunities for public input to the decision-making process.

- to provide appropriate opportunites for public involvment in response planning at disposal sites where releases of oil or hazardous materials are confirmed.

3.0 Issue 2: Public Involvement Activities

In discussing the types of activities that should be undertaken for public involvement, two questions were addressed:

- what are the minimum activities that should be conducted at all sites throughout the site remediation process; and

- at what point in the planning process should activities be started?

Each issue is addressed separately below.

Minimum Activities For Disposal Sites

Local officials and citizens have asked the Department to provide basic information about each disposal site addressed by the Massachusetts Superfund Program. The information requested includes a definition of the nature and extent of the release, identification of alternative response actions, selected response action(s), and plans for operations and maintenance after the response action is implemented.

There are many vehicles available to the Department for providing such information. These include the public notice and press release required at the end of a site investigation by M.G.L. c. 21E §14(a), as well as continued communication with the community officials and concerned citizens in subsequent phases of the response. The Superfund Advisory Committee's recommendation that DEQE continue to provide information to comunities after the site investigation phase has been accepted in principle by the Department.

An issue that needs to be resolved is how much information to provide on a routine basis for all disposal sites. Two options have been discussed:

- all technical reports concerning a disposal site could be routinely sent to a community, or

- the community could be notified that a new report is available and provided with information about how a copy may be obtained or reviewed.

Another issue is who (and how many people) in the community should routinely receive the information about the disposal site. Information could be sent to only the Board of Health, to only the Chief Municipal Official, to both, and/or to interested citizens as well.

Another issue is how specific to make the requirements of the Massachusetts Contingency Plan in terms of public involvement activities at individual disposal sites. The Department recognizes that it is more efficient to identify and incorporate public concerns into planning as early in the process as possible. At the same time, there is a need for flexibility that will allow public involvement activities to be tailored to the types of concerns and needs of the community at each site (e.g., a periodic newsletter might be developed to keep the public informed about site developments and help target resources to fewer and more focussed public meetings).

Recommended Minimum Public Involvement Activities

Activities recommended to involve the public in planning response actions are summarized in Exhibit 1. The draft Massachusetts Contingency Plan proposes to:

1) Establish minimum public involvement activities that will occur at all disposal sites. These activities focus on informing the public about the status

of assessment, evaluation, and cleanup work in two ways: informing communities that studies, etc. are available for their review, and continuing the current practice of making DEQE site files accessible for public review at the agency offices. Information about how the public can become actively involved the response process will also be provided.

2) Designate certain disposal sites for which there is public interest in response actions as "Public Involvement Priority" (PIP) Sites. These PIP sites would get special attention with respect to public participation. PIP sites would be defined as:

- those disposal sites posing such a threat that the Department believes additional public involvement activities are warranted; or

- those disposal sites for which ten or more residents of a municipality in which the site is located petition the Department to prepare a public involvement plan (as required by M.G.L. c. 21E §14); or

- those disposal sites at which the cost of the recommended remedial action is expected to exceed $1 million (the threshold for filing an Environmental Notification Form with the Executive Office of Environmental Affairs, as required by 301 CMR 11.00); or

- those disposal sites for which a grant for technical assistance is made to a group of affected individuals (see the Discussion Paper on the Technical Assistance Grants, and Subpart F of the proposed Massachusetts Contingency Plan).

3) Prepare public involvement plans for PIP sites. The plans will, at a minimum, identify local concerns about the site, establish a local information repository, identify opportunities for public input to response planning, and identify mechanisms for responding to concerns.

Triggers for Starting Public Involvement Activities

Notifications received by the Department about alleged or potential releases of oil or hazardous materials vary widely in terms of accuracy and level of detail. There has been much discussion within the Department and with the Superfund Advisory Committee about the public's need to know on a routine basis about allegations of releases in their community, as well about the ultimate disposition of the allegation (i.e., determination as to whether the alleged release is a confirmed disposal site).

The recent amendments to M.G.L. c. 21E §6 identify two points in the response planning process at which the public must be provided with information. First is a requirement that, within 30 days of the completion of the Phase I site investigation, DEQE must publish a notice and issue a press release describing the results of the investigation, and, for confirmed disposal sites, must also describe opportunities for public involvement in the decision-making.

Second, M.G.L. c. 21E §3A(6) also requires that DEQE publish and update quarterly lists of Locations To Be Investigated and Confirmed Disposal Sites.

The level of public concern about a site can and frequently does change over time. From the Department's perspective, public input would be most valuable while the release is being assessed and response actions are being evaluated and selected (during Phase II and Phase III). However, experience indicates that public awareness of a site may develop before or after these phases, depending on local knowledge of prior disposal activities at the site, the effectiveness of communication, and other local issues. Therefore, the regulations must identify the point(s) in the response planning process at which public involvement planning and activities should be initiated, but must be sufficiently flexible to allow for public input whenever in the process people want to become involved.

Recommended Triggers for Public Involvement Activities

The draft Massachusetts Contingency Plan proposes that the Department:

1) Use the quarterly lists of Locations To Be Investigated and Confirmed Disposal Sites as the mechanism to inform both community officials and the public that the Department has received an allegation of a release of oil/hazardous materials at a specific location. These lists should also serve as public notification of locations that have been investigated and found not to be disposal sites.

2) Utilize the statutory requirements for notices and press releases at the completion of each site investigation as a mechanism to a) inform the public that a disposal site has been confirmed prior to publication of the next quarterly list, and b) to invite local officials and/or the public to inform the Department of their desire to participate in response planning. This recommendation would effectively commence formal public involvement activities when a disposal site is confirmed, and would provide limited formal opportunities for public involvment during the early phases of preliminary assessment and site investigation.

3) Prepare a public involvement plan at any point in the site remediation process, once the location has been confirmed as a disposal site, upon its designation as a Public Involvement Priority Site (described above). Public Involvement Plans will be tailored to fit specific local concerns and the remaining phases of the remediation process.

4.0 Issue 3: Target Audiences

At sites for which DEQE has conducted public involvement activities, input has been solicited from both local officials and the general public. The Department's primary contact in any community is the Board of Health, the local agency with primary responsibility for protecting public health. Currently, the

Department routinely sends copies of Notices of Responsibility to Boards of Health. As needed, DEQE also contacts local Fire and Police Departments (with regard to public safety concerns), and other local boards or agencies as needed to implement response actions at particular sites. These contacts are made on a site-by-site basis. In addition, quarterly listings of confirmed disposal sites and locations to be investigated are routinely sent to Chief Municipal Officials and to Boards of Health.

The Department has also responded to public inquiries and has met with local interest groups and individual citizens to discuss issues, site reports, and other information that has been requested. These contacts have been made when requested by the public.

The Department has considered asking communities to designate a single person or town official to serve as a local site contact, who would be responsible for informing local officials and the general public about site remediation issues. However, the Superfund Advisory Committee has argued that many local officials may want to be involved in site remediation, that a single local contact may work well in some communities (or for some relatively simple sites) but not in all situations, and that the Department does not have the authority to require that a local contact undertake coordination activities.

In the same vein, the Committee argued that local officials should not always be relied upon as the sole source of information about concerns held by the community-at-large. The Committee felt strongly that the public should be consulted directly where interest is evident, and should at least be advised directly (via the media) about opportunities for participating in site remediation.

Recommendations

1) Expand the Department's policy of sending copies of Notices of Responsibility to Boards of Health by also sending copies of NORs to Chief Municipal Officials. In addition, for Phase II and subsequent phases, a notice should be sent to Boards of Health and Chief Municipal Officials that indicates the availability of reports, findings, etc. (with information about how to obtain copies or review the information).

2) Appropriate local officials and citizens should be notified prior to and upon completion of major field work at any disposal site.

3) The general public should also be kept informed of the confirmation of a Disposal Site and about opportunities to participate in planning via the required notice and press release. If interest groups or members of the public indicate an interest in participating, the Public Involvement Plan for that disposal site will specify opportunities for public involvement.

4) A community may designate a single individual as the local site contact. However, this would not preclude the Department from involving other interested parties in site remediation, as appropriate.

5) Where a disposal site affects "downstream", "downgradient", or "downwind" communities, local officials and the public in these communities should be informed about site conditions and offered the same opportunities for public involvement as the community in which the site is located.

5.0 Issue 4: Role of Potentially Responsible Parties in Conducting Public Involvement Activities

Currently, DEQE itself has conducted virtually all public participation efforts for sites, irrespective of the source of funding for assessment and/or cleanup. Consultants for potentially responsible parties have prepared information materials about the impacts of a site, and have provided graphics and other materials that explain site conditions for presentation at public meetings. However, meetings have always been organized and run either by the Department or by a local organization. Most of DEQE's public participation efforts have focussed on disposal sites for which response actions have been paid for by the State Superfund. However, the Superfund Advisory Committee has argued that the public should have access to information about site remediation, no matter who pays for assessing and cleaning up the site.

Options

There are three possible options for conducting public involvement activities at potentially responsible party-funded cleanups:

- the Department alone would conduct the minimum set of activities described above for all disposal sites. This option would provide all parties an opportunity to present their concerns to the public entity with authority to make final decisions (i.e., the Department), and would, as do many local regulatory boards (e.g., Planning Boards, Zoning Boards of Appeals, etc.), establish a forum for airing all sides of issues.

- the Department would offer to potentially responsible parties the opportunity to conduct all public involvement activities that could legally be delegated (just as responsible parties can undertake all technical work). These activities would include providing technical reports to the community; drafting public notices, press releases, public involvement plans, and information materials describing the disposal site; distributing such information to the public after receiving approval from DEQE, and coordinating and conducting public meetings and other activities as specified in the public involvement plan. This option would place the potentially responsible party directly in contact with local officials and community residents, but might not open a communication channel between the public and DEQE (which is the decision-making entity).

- potentially responsible parties would be offered an opportunity to undertake a smaller range of public involvement activities than

described above. In this option, the potentially responsible party would only be able to undertake public involvement activities that are neutral (e.g., providing copies of documents to local information repositories). Activities which involve the presentation of information as well as those designed to involve the public in response planning would still be conducted by the Department with participation by responsible parties as appropriate.

Recommended Role of Potentially Responsible Parties in Conducting Public Involvement Activities

The proposed regulations call for potentially responsible parties to be offered opportunities to conduct some public involvement activities (the third option described above). This option requires the Department to devote considerably more resources to public involvement efforts than the option in which responsible parties can assume all of these activities. However, the benefits of providing a forum for public involvement and communicating public concerns and comments directly to the Department are believed to promote more informed decisions by DEQE. In addition, the Department believes that an advocate (i.e., a potentially responsible party) should not have the sole responsibility for informing the public about a disposal site.

Some activities will be required of potentially responsible parties, and these must be done with DEQE oversight. These activities will be those which are neutral as to any response action (e.g., providing copies of reports to a community). In addition, participation of potentially responsible parties in activities such as public meetings may also be required. In this event, the potentially responsible party may be asked to respond to questions from the public, but meetings will continue to be coordinated and conducted by the Department.

6.0 Issue 5: Enforcement-Sensitive Data/Confidentiality

For some disposal sites, the Department has limited the information made available to the public, due to pending enforcement or cost recovery actions against a potentially responsible party, pursuant to the exclusion in the Massachusetts definition of Public Records (M.G.L. c. 4 §7) for enforcement-sensitive information. The Department and the Superfund Advisory Committee agree that to the extent legally possible, information should be provided to the community about potential risks to public health and the environment -- at least a characterization of the problem and its extent, and an understanding of response actions to be taken. At the same time the Department must also protect its ability to effectively pursue enforcement cases.

Information on a disposal site may be designated as "enforcement-sensitive" when the Department seeks some type of remedy for a violation of a statute or regulation (e.g., a failure to notify the Department of a release of oil or hazardous material). Cases involving "enforcement-sensitive" information are of two types: (1) cases which the Department has referred to the Attorney General's

Office for civil or criminal prosecution, and (2) cases being handled administratively by DEQE.

Draft documents pertaining to the development of Department policy about a disposal site may also be withheld according to the definition of Public Records (M.G.L. c. 4 §7). In general, information concerning the status of a location (e.g., whether it is a confirmed disposal site or not), parties to whom Notices of Responsibility are sent, data received from responsible parties, and planned subsequent actions will be made available to the public, unless there is an on-going enforcement action that would be jeopardized by release of the information.

In some cases, firms request that information which they have submitted to the Department be kept confidential - i.e., that the data not be made available to the public. In these cases, the Department will be guided by its regulations (310 CMR 3.00) in deciding whether to grant such requests.

7.0 Questions for Comment

Following are questions for which the Department is specifically soliciting public comment. Comments are also welcome on any other issues related to public involvement activities.

7.1 Objectives of Public Involvement

- Are the objectives described in Section 3.1 sufficiently comprehensive to foster the quantity and type of public involvement that will improve the Department's decisionmaking?

7.2 Public Involvement Activities

- Does the proposed identification of minimum activities for all disposal sites provide sufficient information for members of the public to become involved in response planning if desired?

- Is the concept and definition of Public Involvement Priority Sites appropriate? Will this concept provide both needed flexibility and adequate opportunities for the public to become involved in response planning?

- Are the minimum requirements for public involvement plans adequate?

- Is limiting formal public involvement activities to confirmed disposal sites a reasonable approach?

- Does the quarterly list of confirmed disposal sites and locations to be investigated provide the public with sufficient information about alleged releases of oil and hazardous materials?

7.3 Target Audiences

- Will the proposed regulations provide sufficient information and opportunities for involvement to the most appropriate local officials?
- Will interested members of the public be provided with appropriate information?

7.4 Role of Responsible Parties in Conducting Public Involvement Activities

- Should public involvement activities be undertaken for disposal sites where response actions are being conducted by responsible parties?
- If responsible parties should have a role in conducting public involvement activities, what is an appropriate role?

EXHIBIT 1

PUBLIC INVOLVEMENT IN REMEDIAL ACTION PLANNING

WHEN	WHERE	ACTIVITIES	WHO
Confirmation of Release (end of Phase I)	All Sites:	° Send copy of legal notice, press release, and NOR to Board of Health, Chief Municipal Officer	DEQE
		° PUBLISH LEGAL NOTICE IN LOCAL NEWSPAPER WITHIN 30 DAYS OF SITE CONFIRMATION (include DEQE contact, opportunities for public involvement (c. 21E, §14(a))	DEQE
		° ISSUE PRESS RELEASE FOR LOCAL NEWSPAPER WITHIN 30 DAYS OF SITE CONFIRMATION (include DEQE contact, opportunities for public involvment (c. 21E, §14(a))	DEQE
		° Establish publicly accessible site file at appropriate DEQE regional office, with release confirmation,available background documents, NOR copy, etc.	DEQE
		° Document briefings, record comments and concerns	DEQE
	PIP Sites*:	° DEVELOP PUBLIC INVOLVEMENT PLAN TO ENSURE SUFFICIENT NOTICE, ACCESS TO DOCUMENTS, & OPPORTUNITIES TO COMMENT ON PROPOSED RESPONSE ACTIONS (to include a local information repository, identifying local concerns and mechanisms for responding to concerns, and other appropriate activities to encourage input to decisions	DEQE
		° HOLD PUBLIC MEETING TO PRESENT PLAN and to explain site conditions	DEQE
		° REVISE PLAN AS APPROPRIATE; MAKE IT AVAILABLE TO PUBLIC	DEQE
Phase II and subsequent phases	All Sites:	° Provide notices of availability of correspondence, site assessment reports to Board of Health, Chief Municipal Official (or other local information repository if set up)	DEQE/RP
		° Document briefings, record comments and concerns	DEQE
	PIP Sites*:	° Implement Public Involvement Plan	DEQE/RP
		° Review plan at start of each phase, modify if necessary	DEQE
		° Issue press release for local newspaper describing study results, probable next steps, opportunities for public comment	DEQE

*PIP Sites are those sites which are priorities for additional public involvement efforts.

CAPS denote requirements of the December 1986 amendments to c. 21E.

WHEN		ACTIVITIES	WHO
Prior to major field work at site	All Sites:	° Notify local officials about purpose, expected duration, possible subsequent actions (RP to do in writing, with copy to DEQE)	DEQE/RP
		° Document notifications, record comments & concerns raised	DEQE
	PIP Sites*:	° Issue press release	DEQE
		° Provide in-depth briefing for local officials, public if requested	DEQE/RP
During/At close of major field work at site	All Sites:	° Notify local officials about delays, major changes in scope, progress, conclusions, next steps (RP to do in writing, with copy to DEQE)	DEQE/RP
		° Document briefings, record comments and concerns raised	DEQE
	PIP Sites*:	° Hold on-site briefing for local media if possible	DEQE/RP
		° Issue press release to announce closure	DEQE/RP

*PIP Sites are those which are priorities for additional public involvement efforts.

CAPS denote requirements of the December 1986 amendments to c. 21E.

Discussion Paper

Intermediate Time Schedules and Time Limits
for Departmental Approvals

1.0 Introduction

The Massachusetts Oil and Hazardous Material Release Prevention and Response Act established a number of statutory deadlines for actions to be taken at disposal sites. Once a location is listed as a Location To Be Investigated by the Department several deadlines must be met. These include:

* Within one year of the listing, a preliminary assessment must be completed that determines the need for further investigation;

* Within two years of the listing, site investigations must be completed for locations warranting further investigation, and sites must be classified as "priority disposal sites" or "disposal sites";

* Within four years of the listing, "priority disposal sites" must be fully evaluated, and a temporary solution implemented if a permanent solution is not feasible. If a permanent remedy is not feasible, a plan for implementing permanent remedial measures must be developed. (For confirmed sites listed on January 15, 1987, these actions must be taken within three years.)

* Within seven years of the listing, all disposal sites must be fully evaluated, and a plan for a permanent solution developed.

This paper will discuss two issues relating to the Department's ability to meet the above timetables. The first issue is the setting of intermediate deadlines for the completion of response actions conducted by potentially responsible parties (PRPs). The second is the setting of time limits for Departmental approvals of PRP-submitted materials. Several such approvals are required, but no time limits are currently specified.

These two issues have surfaced because the statutory deadlines require a considerable amount of activity and progress at disposal sites in a relatively short period of time. Table 1 summarizes activities that are associated with major milestones for priority disposal sites; these activities are further described in Subpart D. It is evident from this table that the completion of all these activities within the statutory deadlines will be extremely difficult. These constraints make it imperative that the Department ensure that the site assessment and remediation process proceed in a timely manner.

Table 1: Timetable for Priority Disposal Sites

Major Milestone	Associated Activities	Statutory Deadline
Listing LTBI	° DEQE notifies PRP of intent to list and/or NOR	
	° Listing	0
	° Requests PRP to do PA/SI	
PA Completed	° PA submitted to DEQE	1 yr.
	° DEQE evaluates need for further investigation, short term measures, or no-action, attempts to designate as confirmed disposal site	
	° Plan for SI submitted to DEQE, if desired	
	° DEQE evaluates adequacy of SI plan	
	° SI initiated	
SI Completed	° SI submitted to DEQE	2 yrs.
	° DEQE evaluates need for further investigation, short term measures, or no-action, attempts to designate as confirmed disposal site	
	° DEQE classifies sites, designates priority disposal sites	
	° DEQE prepares public notice of SI results	
	° Work Plan for Phase II submitted	
	° DEQE approves Phase II Work Plan	
	° Phase II initiated	
Phase II Completed	° Phase II report submitted to DEQE	Not specified
	° DEQE evaluates need for further investigation, short term measures, or no-action	
	° Phase III initiated	

Table 1 Continued

Major Milestone	Associated Activities	Statutory Deadline
Phase III Completed	° Phase III report submitted	Not specified
	° Final Remedial Response Plan submitted	
	° DEQE approves proposed alternative	
	° Phase IV initiated	
	° Submission of intermediate design/ progress report if required	
	° DEQE review of interim report	
Preliminary Design Completed	° Submission of Preliminary Design to DEQE	Not specified
	° DEQE provides comments on Preliminary Design	
	° Submission of final design	
	° DEQE approves final design	
	° Construction/Implementation of final design	
Temporary or Permanent Solution Implemented	° Implementation completed	4 yrs.

It is the Department's policy to allow PRPs to conduct response actions, provided that they are consistent with the MCP and M.G.L. c. 21E. M.G.L. c. 21E §3A(j) states that:

> "the Department shall ensure that all of the action deadlines specified in this section are met. Toward that end, the Department shall establish and implement intermediate deadlines for each disposal site, including but not limited to, deadlines for compliance with orders and termination of settlement discussions which will ensure action by the Department or other persons consistent with the deadlines of this section."

Several questions relate to the implementation of this requirement:

1. Should intermediate deadlines be generically specified in the MCP, or should they be developed on a site-specific basis through enforcement mechanisms, such as consent orders?

2. If intermediate deadlines are to be specified in the MCP, what types of activities should they encompass?

3. If intermediate deadlines are to be specified in the MCP, how would they be related to statutory deadlines?

The statutory language cited can be interpreted as meaning that intermediate deadlines would be implemented on a site-specific basis, by reference to each disposal site. The types of deadlines specified in the statute (deadlines for compliance with agreements, orders and termination of settlement discussions) could only be specified on a site-specific basis, since they would vary considerably.

The Department also has the broad and general authority "for the implementation, administration and enforcement of this chapter" and it may be advantageous for the Department to specify some types of generic interim deadlines in the MCP. For example, the statute requires that a preliminary assessment be conducted within one year. It is the Department's responsibility to ensure that this, as well as other, statutory deadlines are met. In order to assure compliance with these deadlines, the Department could specify that preliminary assessments being conducted by PRPs must be completed in 6 or 9 months. This would prevent situations where the one year deadline is reached and the Department learns at that time that the preliminary assessment has not been completed by the PRP. It would also prevent last minute discoveries that a PRP-prepared report is inadequate. Either of these situations would not allow the Department sufficient time to complete the preliminary assessment, or to take enforcement actions to make the potentially responsible party complete the preliminary assessment, within the one-year time period. The same situations could occur at the two year and the four year deadline.

After the site investigation is completed, a number of major steps take place, including Phase II, Phase III, as well as Phase IV, as shown in Table 1.

These phases represent the comprehensive work done at disposal sites. The MCP requires submission of the following documents by the PRPs to the Department:

- Preliminary Assessment Form
- Phase I - Site Investigation Report
- Phase II Work Plan for the Full Evaluation
- Phase II - Full Evaluation Report
- Phase III Report and Final Remedial Response Plan
- The Preliminary Design
- The Final Design
- The Final Inspection Report

While these documents must be submitted to the Department pursuant to the MCP, there are no specific statutory or regulatory deadlines which state when these documents must be provided to the Department. The Department could specify intermediate deadlines for the submission of some or all of these reports.

There are several options the Department is considering for the implementation of intermediate deadlines:

1. The Department could specify in the MCP generic intermediate deadlines for required submissions by PRPs. This option has advantages, in that it would be straightforward; the requirements would be clear to both PRPs and the Department. The intermediate deadlines would increase the probability of meeting the statutory deadlines. On the other hand, these deadlines could limit the flexibility of the Department, as well as other parties, in proceeding through the response action process. In addition, the statutory deadlines are already very strict. To place even shorter deadlines on PRPs may be unrealistic.

2. The Department could decide not to specify intermediate deadlines in the MCP, but use a site-specific approach through consent orders negotiated for individual sites. The advantage of this option is that the deadlines set in a consent order would be developed with consideration given to the specific conditions of a disposal site and would allow more flexibility than generic deadlines. On the other hand, the Department would have to negotiate a consent order for every disposal site in order to implement intermediate deadlines, a time-consuming process.

3. The Department could specify generic intermediate deadlines in the MCP, but such deadlines could be waived. Conditions for waiving might include the development of a consent order or site-specific conditions that warrant longer or shorter deadlines. This option would have the advantages of Option 1 above, but would allow more flexibility based on site-specific conditions. One disadvantage is that the waiving of deadlines will require some justification by the PRP and a determination by the Department, which may cause further delay in the response process.

4. The Department could decide not to specify interim deadlines in the MCP, but use a site-specific approach through a variety of mechanisms. This option is similar to Option 2 above, and has the same advantages. It would not necessarily require the negotiation of a consent order at every disposal site. More informal mechanisms, however, may not be enforceable or subject to administrative penalties.

5. The Department may decide not to specify intermediate deadlines. The only advantage of this option is that it could represent less of an oversight burden on the Department. On the other hand, it could result in serious violations of the statutory deadlines.

3.0 Issue Two - Time Limits for Department Approvals

The MCP would require the Department to provide written approvals of the following documents submitted by PRPs.

- Phase II Work Plan
- Phase II Report
- The proposed remedial action as developed in the Phase III report, and the Final Remedial Response Plan
- The Final Design of the proposed alternative.

In addition to these formal approvals, the Department must make determinations throughout the process; e.g., whether the location should be designated as a disposal site or whether the disposal site should be considered a priority disposal site.

The draft MCP does not impose time limits on the Department for providing these written approvals or making these determinations. The Department is concerned at this time with its ability to comply with any such time constraints due to limited staff resources. However, it is the responsibility of the Department to ensure that statutory deadlines are met, and the Department recognizes the importance of its prompt review and response to submittals. Options the Department is considering are as follows:

1. The Department could specify time limits for some or all written approvals in the MCP, e.g., 90 days to respond to a Phase II work plan. The advantage of this option is that the requirements are clear to all parties, and the deadlines would be developed with the objective of meeting the statutory deadlines. On the other hand, the Department wants to ensure that these deadlines are realistic in light of current and anticipated resources. The implementation of this deadline would have to be further developed. One issue, for example, is that if a submittal is returned as incomplete, the clock should not start until it is resubmitted. Numerous such issues would have to be resolved if generic approval times are specified in the MCP.

2. The Department could propose a phased approach to deadlines that parallels the Department's increasing resources. For example, the deadline for responding to a Phase II work plan could be 120 days in 1988, 90 days in 1989, and 60 days in 1990, assuming certain levels of resources. While initially lengthy, the approval times would be specified under this option, allowing PRPs, as well as the Department, to better plan response actions. As resources become available, the approval times would become increasingly shorter. This option has the same advantages and disadvantages as Option 1. However, it provides additional flexibility for the Department to account for current resource limitations.

3. The Department could propose no approval or determination deadlines in the MCP, but develop internal policy that would dictate a set deadline or a phased approach. This policy would remain a goal, to be adjusted based upon experience, and would not become regulation. This option has maximum flexibility for the Department, but it could result in considerable uncertainty for PRPs regarding the status of their sites, and may result in failure to meet statutory deadlines.

4.0 Questions for Comment

The Department welcomes comments on the options presented in Section 2.0 for implementation of intermediate deadlines, as well as on what specific deadlines should be specified. The Department would also like comment on the three options presented above regarding Department deadlines for approvals and determinations. Specific suggestions for set deadlines or phased deadlines would also be appreciated.

DISCUSSION PAPER

SCREENING CRITERIA FOR LOCATIONS TO BE INVESTIGATED

EVALUATION SYSTEM FOR LISTING DECISIONS

INTRODUCTION

The Massachusetts OIl and Hazardous Material Release Prevention and Response Act (M.G.L. Chapter 21E), amended in 1986, required the Department of Environmental Quality Engineering to list 400 Locations To Be Investigated on January 15, 1987, 600 additional locations by January 15, 1988, and then to list annually 1000 new locations each subsequent year. In order to meet these numerical goals, the Department will identify more environmental problems than ever before. The Department will expand on present site discovery activities, adding methods that will actively broaden the search. As a consequence, the Department will learn of a greater number and variety of environmental problems, many of which may not fall under the jurisdiction of 21E.

This combination of additional environmental problems and a wider spectrum of potential problems presents the Department with two procedural questions which must be answered in order to handle effeciently and fairly these potential locations (Figure 1). The first is how to decide which potential locations belong under the 21E program as Locations To Be Investigated. The Location To Be Investigated list will include only potential disposal sites. Consequently, the program must limit its actions to disposal sites or potential disposal sites. The second is whether or not the Department should list immediately all the locations identified or list only enough locations to meet the numerical goals. The law allows the Department to prioritize the locations as to their

likelihood of being a disposal site, list the top 1000, and hold the rest in reserve for later listing.

This discussion paper outlines the rationale for a proposed two step process that a location must undergo before it is placed on the list. Step 1 is the screening criteria which will be used to determine if the environmental problem meets the definitional requirements. Step 2 is an evaluation system to determine which of the 1000+ identified locations to list immediately. Three alternatives for this second step are described.

ISSUES

Step 1. Screening Criteria

When the Department learns about a potential Location To Be Investigated, the Department must first decide whether 21E applies to the problem. M.G.L. c. 21E principally addresses the discovery and cleanup of disposal sites with its listing requirements and contains a definition of a disposal site. The potential location must fall under that definition. Definitions of disposal site, site, and release also contain exemptions that further exclude contamination problems such as "lead-based paint residues emanating from a point of original application" from consideration as a disposal site.

The following proposed screening criteria determines if the potential location meets the legal requirements for action under the statute as a possible disposal site. Use of these criteria would limit 21E action, and help refer other environmental concerns to the proper programs. The screening criteria include the following:

Screening Criteria.

A possible location must receive affirmative responses to the following questions to meet the general definition of a disposal site:

1. Is the location a structure, well, pit, pond, lagoon, impoundment, ditch, or landfill or other place where uncontrolled oil or hazardous materials is alleged or reported to be located?

2. Is is reasonably likely that the material reported to be present at the location actually is an oil or hazardous material as defined in 21E?

3. Is the oil or hazardous material alleged or reported to have been released by spilling, leaking, pouring, abandoning, emitting, emmptying, discharging, injecting, escaping, leaching, discarding or otherwise?

4. Based upon uses of the property in question, the conditions reported, or other information available to the Department, is the location reasonably likely to be a disposal site?

Exclusions

If a problem is known to meet any of the following criteria, it will not be listed as a Location To Be Investigated.

1. The location is
   a. limited to ambient air or surface water
   b. a vessel
2. The material involved is
   a. a consumer product in consumer use
   b. lead-based paint emanating from a point of original application
   c. a material which resulted from emissions from the exhaust of an engine
   d. building materials still serving their original intended use or emanating from such use, or
   e. from a release of nuclear material from an incident under 42 USC Sec. 2014 for which financial assurrances have been established.
3. The activity involved is either
   a. the application of pesticides consistent with their labeling, or
   b. the normal application of a fertilizer

If the problem meets the screening criteria, it will be termed a Location To Be Investigated, and will go on to Step 2. If it does not meet the criteria, it will be referred to the proper program with the authority to handle it.

Step 2. Evaluation of Locations To Be Investigated

Every location will eventually end up on the list of Locations To Be Investigated and be subject to the statutory investigation procedures and clean-up timetables if it is confirmed as a disposal site. If the Department finds more than the requisite number of new locations, the law allows the Department to decide when to place a location on the list. The Department may evaluate the locations as to their likelihood of being a disposal sites and hold lower priority locations in reserve for later listing. The Department must decide if it wishes to conduct this evaluation, and if so, how to properly evaluate the environmental threat.

Option 1 - If the Department decides not to evaluate locations, it would simply list immediately all locations it identifies. The advantages are no need for a reserve list and a consistent approach to listing decisions.

The major disadvantage is that the mandated deadlines would overwhelm the Department's limited resources, slowing down the over all clean-up effort, and diverting resources from seriously contaminated locations to lesser problems.

Option 2 - The Department could list the locations in the chronologic order of discovery, stopping when it reaches the required number. This would provide consistent, not subjective, listing practices across the Department and automatically limit the number of locations to the legal requirement. However, this system does not consider the likelihood of a location being a disposal site as the law stipulates. Further, it would result in holding potentially serious contamination problems on the reserve list, while the Department focuses on less serious problems which were simply discovered earlier.

Option 3 - The Department could establish an evaluation system that addresses a location's likelihood of being a disposal site (see the attached proposed evaluation system). The goals of such a system would be to fairly compare the severity of different types of problems, and require a limited amount of time to use.

A system that reaches the above goals meets the requirements of 21E, while providing other advantages. The system would systematically prioritize listing decisions, decrease subjectivity in listing locations, and provide a method compatible with a computer data management system.

The disadvantages of such a system may include, limited flexibility as listing decisions would be based on the system, and added forms and paperwork.

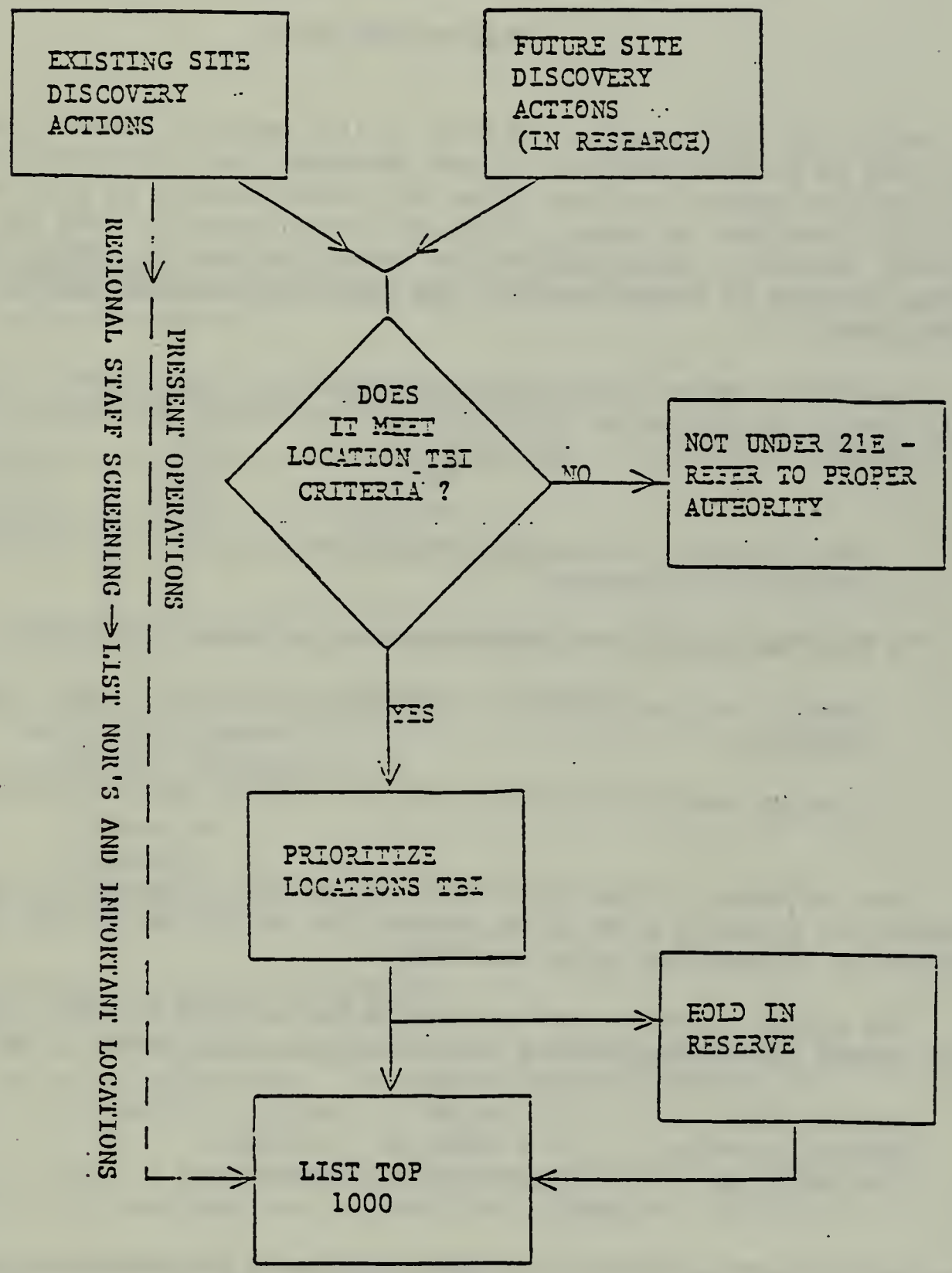
Such a system will require pilot testing and the most technical input for development and operation of any option (See Attachment 1 for an example system).

Public Comment

The Department seeks public comment on the two step process for Locations To Be Investigated, the options presented in Step 2, and the proposed criteria in Attachment 1.

FIGURE 1

COMPREHENSIVE SITE DISCOVERY PROGRAM


EXISTING SITE DISCOVERY ACTIONS
FUTURE SITE DISCOVERY ACTIONS (IN RESEARCH)
PRESENT OPERATIONS
REGIONAL STAFF SCREENING → LIST NOR'S AND IMPORTANT LOCATIONS
DOES IT MEET LOCATION TBI CRITERIA ?
NO
NOT UNDER 21E - REFER TO PROPER AUTHORITY
YES
PRIORITIZE LOCATIONS TBI
HOLD IN RESERVE
LIST TOP 1000

ATTACHMENT 1

EXAMPLE OF EVALUATION SYSYEM FOR LISTING DECISIONS

PRELIMINARY DRAFT

M.G.L. Ch. 21E requires the DEQE to list annually certain numbers of Locations to be Investigated. If the department has identified more than the requisite number, the law allows the prioritization of the locations as to their likelihood of being a disposal site in order to list the higher priority locations, while holding the others in reserve. Using only the current methods of site discovery, the department should meet the 1987 number goals.

A priority system that fairly emphasises the department's priorities could assist in addressing all locations even beyond the requisite number of locations. It will:

- Fairly compare locations from different sources with different available information.
- Provide criteria and documentation for listing decisions.
- Require only preliminary information requiring a bare minimum of research.
- Provide consistent application of criteria for listing statewide.

The following system illustrates one example of a prioritization system. It provides a basis to discuss type of system desired, and the categories of problems to be considered.

The system contains four categories to be rated as high, medium, or low. Then, as an example, the sites could be prioritized as follows:

High priority:	> 2 highs
Medium priority:	1 - 2 highs or 3 mediums
Low priority:	0 highs and < 3 mediums

The ratings are to be done with the preliminary information at hand or available from either one phone call or referral to the Water Supply Atlas. Absolute accuracy is not necessary. Estimates, especially for quantity, will suffice. The goal is to accurately prioritize the large majority of locations to be investigated.

PRELIMINARY DRAFT

EVALUATION SYSTEM FOR LISTING DECISIONS

I. Quantity of Released* Material
(Use the column which provides the best estimate given the information at hand.)

RANK	No. of gallons	No. of drums	No. of yd contaminated
H	1000	> 20	> 1000
M	100-1000	2-20	100-1000
L	100	< 2	< 100

Or if estimates of quantity are unavailable, use the category of use

RANK	Material released in quantities related to:
H	Industrial
M	Commercial
L	Consumer

II. Hazard Potential of Released Material

H Material is life threatening or causes permanent physical impairment under any conditions. It requires extreme caution in handling. Example: cyanide

M Material poses a hazard when either uncontained or improperly handled. It requires care in handling. Example: gasoline

L Material poses a hazard only under the most unusual conditions or in overwhelming quantities. Example: Tar

* Released includes released and threatened to be released

III. CONTACT POTENTIAL

With the following hazards, rank those that apply as to:
H = likely or known, or
M = possible, or
L = unlikely
Use the highest rating as the category rating.

___ Direct contact through physical access to surficial contamination, including open lagoons, drum storage areas, and sludges. Consider restrictions on accessibility, remoteness of location, and uses of neighboring areas.

___ Direct contact through inhalation of either fumes or aiborne material from contamination.

___ Direct contact through use of contaminated recreational waters.

___ Contamination of the food chain.

___ Floating product on groundwater. Special circumstance: a known oil sheen on the waters of the Commonwealth would rate an M.

___ Threat of fire and/or explosion remains even after an emergency response, ie: an uncontrolled or unknown source.

____ Drinking water

(Use the column which provides the best description.)

RANK	Contamination of Drinking water	OR	Distance from a drinking water source
H	known or very likely		2000 feet
M	possible		2000-5000 feet
L	unlikely		5000 feet

_____

_____ Category Rating

IV. ENVIRONMENTAL EFFECTS

H - 2 of below checked
M - 1 of below checked
L - 0 of below checked

Check if contaminated or threatened.

___ Sensitive ecosystem

___ Endangered species

___ Wetlands

___ Fish hatcheries

___ Wildlife preserves

___ Local, state or national parks, forests and recreation areas

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Totals

_____ H's

_____ M's

_____ L's

_____ FINAL RATING